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# REPORT RESUMES

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CRITERION MEASURES DEVELOPED FOR ON-THE-JOB PERFORMANCE OF PHYSICIANS WILL BE USED IN A SUBSEQUENT STUDY TO DETERMINE HOW MUCH THE PERFORMANCE OF PHYSICIANS CAN BE PREDICTED BY THEIR INDIVIDUAL ACHIEVEMENTS IN MEDICAL AND PREMEDICAL SCHOOL. APPROXIMATELY 29 MEASURES OF THE UNIVERSITY OF UTAH COLLEGE OF MEDICINE AND OTHER PHYSICIANS IN THE UTAH AREA WERE OBTAINED. THE CRITERION MEASURES WERE COLLECTED BY MEANS OF INTERVIEWS AND MAIL QUESTIONNAIRES. THE PSYCHOMETRIC PROPERTIES -- SUCH AS RELIABILITY, INTERCORRELATION, AND FACTORIAL COMPOSITION -- OF THESE MEASURES WERE STUDIED. PHYSICIANS WERE DIVIDED INTO URBAN AND RURAL PRACTICE WITH SEVERAL CRITERION MEASURES BEING COMMON TO ALL GROUPS. FOR EACH GROUP THE VARIOUS CRITERIA WERE INTERCORRELATED AND FACTOR ANALYZED. EACH FACTOR WAS THEN TREATED AS A SEPARATE INDEX OF SUCCESS. FACTOR ANALYSIS UNCOVERED BETWEEN 25 AND 30 FACTORS FOR EACH SAMPLE OF PHYSICIAN STUDIED. A SECOND FINDING WAS THAT ACADEMIC ACHIEVEMENT DOES NOT BEAR A POSITIVE RELATIONSHIP TO PERFORMANCE AS A PRACTICING RESEARCHER, ACADEMICIAN, OR PHYSICIAN. IT WAS FOUND IN FIVE GROUPS THAT (1) MEDICAL AND PREMEDICAL SCHOOL ACHIEVEMENT WAS ESSENTIALLY INDEPENDENT OF THE NUMEROUS MEASURES OF PROFESSIONAL CONTRIBUTIONS, ACCOMPLISHMENTS, AND ACTIVITIES THAT WERE ANALYZED, AND (2) HIGHLY TRAINED PHYSICIANS ARE AMENABLE NOT ONLY TO PSYCHOLOGICAL INVESTIGATION BUT ALSO TO THE COLLECTION OF MEANINGFUL CRITERION DATA FROM THEM. FOLLOWON STUDIES WILL ATTEMPT TO USE BIOGRAPHICAL INVENTORIES AND SELF-RATINGS AS PREDICTORS. (HB)

1551

# PERFORMANCE MEASURES OF PHYSICIANS

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## TABLE OF CONTENTS

Page
Acknowledgments.......... 1
List of Tables.......... 4
Chapter
I. Introduction.......... 6
  Experimental Design.......... 9
  Data Analysis.......... 9
  Data Collection.......... 11
II. An Investigation of the Criterion Problem for a Medical School Faculty.......... 14
  Subjects.......... 14
  Criterion Measures.......... 14
  Representativeness of the Sample.......... 15
  Results.......... 15
  Conclusions.......... 22
III. An Investigation of the Criterion Problem for a Group of Urban Medical Specialists.......... 29
  Subjects.......... 29
  Criterion Measures.......... 29
  Representativeness of the Sample.......... 30
  Results.......... 31
  Conclusions.......... 38
IV. An Investigation of the Criterion Problem for a Group of General Practitioners.......... 45
  Combined Urban and Rural General Practitioner Sample.......... 46
    Subjects.......... 46
    Criterion Measures.......... 46
    Representativeness of the Sample.......... 46
    Results.......... 47
    Conclusions.......... 56
  Urban General Practitioner Sample.......... 57
    Subjects.......... 57
    Criterion Measures.......... 57
    Representativeness of the Sample.......... 57
    Results.......... 58
    Conclusions.......... 64
  Rural General Practitioner Sample.......... 64
    Subjects.......... 64
    Criterion Measures.......... 65
    Representativeness of the Sample.......... 65
    Results.......... 65
    Conclusions.......... 72
  Integration.......... 72
V. Discussion.......... 93
VI. Summary.......... 108
References.......... 113

## TABLE OF CONTENTS

(continued)

Appendix Page

A. Title, Source, and Description of Scoring System for College of Medicine Full-Time Faculty Sample .......... 117
B. Title, Source, and Description of Scoring System for Urban Specialist Sample .......... 140
C. Title, Source, and Description of Scoring System for Urban General Practitioner Sample, Rural General Practitioner Sample, And Combined Urban and Rural General Practitioner Sample .......... 163

# LIST OF TABLES

Table Page

I. Title and Source for Each Variable for College of Medicine Full-Time Faculty.............................. 24

II. Eigenvalues and Cumulative Proportion of Variance Accounted for for Full-Time Faculty.............................. 25

III. Intercorrelations of Variables for Full-Time Faculty................ 26

IV. Unrotated Factor Matrix for Full-Time Faculty.................... 27

V. Rotated Factor Matrix and Communalities for College of Medicine Full-Time Faculty............................. 28

VI. Title and Source for Each Variable for Urban Specialist Sample.............................................. 40

VII. Intercorrelations of Variables for Urban Specialist Sample......... 41

VIII. Eigenvalues and Cumulative Proportion of Variance Accounted for for Urban Specialist Unrotated Facotrs.............. 42

IX. Unrotated Factor Matrix and Communalities for Urban Specialist Sample.............................................. 43

X. Rotated Factor Matrix and Communalities for Urban Specialist Sample.............................................. 44

XI. Title and Source for Each Variable for Urban General Practitioner Sample, Rural General Practitioner Sample, and Combined Urban And Rural General Practitioner Sample............................. 77

XII. Intercorrelations of Variables for Combined Urban And Rural General Practitioner Sample............................. 78

XIII. Eigenvalues and Cumulative Proportion of Variance Accounted for for Combined Urban and Rural General Practitioner Sample Unrotated Factors.............. 79

XIV. Unrotated Factor Matrix and Communalities for Combined Urban and Rural General Practitioner Sample............. 80

XV. Rotated Factor Matrix and Communalities for Combined Urban and Rural General Practitioner Sample............. 81

XVI. Intercorrelation of Variables for Urban General Practitioner Sample.............................................. 82

XVII. Eigenvalues and Cumulative Proportion of Variance Accounted for for Urban General Practitioner Sample.............. 83

XVIII. Unrotated Factor Matrix and Communalities for Urban General Practitioner Sample.............................. 84

XIX. Rotated Factor Matrix and Communalities for Urban General Practitioner Sample.............................. 85

XX. Intercorrelation of Variables for Rural General Practitioner Sample.................................. 86

## LIST OF TABLES

(continued)

Table — Page

XXI. Eigenvalues and Cumulative Proportion of Varicance Accounted for for Rural General Practitioner Sample........87

XXII. Unrotated Factor Matrix and Communalities for Rural General Practitioner Sample........88

XXIII. Rotated Factor Matrix and Communalities for Rural General Practitioner Sample........89

XXIV. Coefficients of Congruency Between Factors for Combined Urban and Rural General Practitioner Sample And Urban General Practitioner Sample........90

XXV. Coefficients of Congu ency Between Factors for Combined Urban and Rural General Practitioner Sample and Rural General Practitioner Sample........91

XXVI. Coefficients of Congruency Between Factors for Urban General Practitioner Sample and Rural General Practitioner Sample........92

XXVII. Table of Common Factors........100

XXVIII. Frequency Distribution of Intercorrelations Between Measures of Academic Performance and Measures of Physician Performance, Compared with Best-Fitting Normal Curve for Same Data........103

XXIX. Change in Correlation as a Function of Change in Variance of the Incidental Selection Variable........107g

XXX. Values of the Corrected Unbiased Estimate of the Correlation Between an Explicitly Selected Variable when the Ratio of the Standard Deviation Of the Incidently Selected Variable and its Standard Deviation in the Unbiased Population and the Biased Estimate of the Correlation is Known........107i

XXXI. Values of $s_y/S_y$ when the Unrestricted Correlation Between x and y and the Amount of Restriction of Range of x is given........107k

# Chapter I

## Introduction

From our previous research experience on studying the performances and accomplishments of scientists, we expected to encounter considerable complexity in the total criterion problem of physician performances. This complexity both in the nature of the tasks and the measurement of the performances of physicians in each of these tasks is well illustrated by the following analogy found in the medical education literature.

> Once upon a time the animals decided they must do something heroic to meet the problems of a 'new world.' So they organized a school. They adopted an activity curriculum consisting of running, climbing, swimming, and flying. To make it easier to administer the curriculum, all the animals took all the subjects.
>
> The duck was excellent in swimming, in fact better than his instructor; but he made only passing grades in flying and was very poor in running. Since he was slow in running, he had to stay after school and also drop swimming in order to practice running. This was kept up until his web feet were badly worn and he was only average in swimming. But the average was acceptable in school, so nobody worried about that except the duck.
>
> The rabbit started at the top of the class in running, but he had a nervous breakdown because of so much makeup work in swimming.
>
> The squirrel was excellent in climbing until he developed frustration in the flying class, where his teachers made him start from the ground up instead of from the treetop down. He also developed muscle cramps from overexertion and then got 'C' in climbing and 'D' in running.
>
> The eagle was a problem child and was disciplined severely. In the climbing class he beat all the others to the top of the tree, but he insisted on using his own way to get there.
>
> At the end of the year an abnormal eel that could swim well and also could run, climb, and fly a little, had the highest average and was graduated with honors. (Casberg, 1961.)

Contrary to the animal school, the goal of professional medical education is to produce people who will be successful, rather than mediocre, practicing physicians. However, in aiming toward this goal, medical educators have faced two major problems (1) determining the kinds of persons that are most apt to become successful physicians and therefore should be accepted for training, and (2) finding the kinds of training activities that will produce successful physicians. The first problem is quite important because every year there are thousands of young men and women who apply to medical schools for admission. The medical schools do not have the facilities to accept everyone who applies, nor is it felt that everyone who submits an application is necessarily suited to become a successful physician. Therefore medical educators have usually relied upon selection programs to assist them in deciding who should be admitted to medical school and who should be turned away. These selection programs have typically consisted of such procedures as reviewing completed application forms and letters of recommendation, interviewing applicants, administering aptitude test batteries to the applicants, and reviewing their pre-medical school grades.

But by relying upon these selection programs, medical educators have committed themselves--whether they have been aware of it or not--to letting the selection programs define the characteristics applicants would have to offer as they attempt to become successful physicians. By and large these selection programs have traditionally been justified on the basis that they tend to predict how well persons will perform in medical school, as gauged by medical school academic grades and other academic performance ratings. But this involves two questionable assumptions: (1) a significant relationship exists between a person's performance in medical school and his performance after in medical practice, and (2) valid predictors of his performance in training as are utilized in the applicant screening programs, will also predict his performance as a physician.

When the testing programs were inaugurated, however, little evidence was collected to justify these assumptions. Rather the use of successful performance in medical school as a criterion for evaluating the predictive value of the testing programs was rationalized primarily because it was easier to obtain measures of persons'' performance in medical school--such as grades in classes--than it was to obtain measures of persons' performance as physicians out in practice. And, it was felt that a minimum degree of success in training was a prerequisite to entering the profession anyway. However, neither of these reasons is sufficiently relevant to justify the two assumptions underlying medical student selection programs just pointed out above.

Both sophisticated opinion and empirical research over the past ten years has been accumulating supporting the need for investigations of the relationships between predictors of students' performance in medical school and their later performances as practicing physicians (Casberg, 1961; Anderson, 1962; Ausubel, 1962; Aagard, 19[illegible]). For example, Murphee (1961) writes:

> Two of the problems which present themselves as needing investigation are: how can we predict which students will be 'good' physicians with more accuracy than just the assumption that good students will become good physicians? And what do we mean by 'good' physicians? To answer the first question we need good predictor criteria, i.e., some set of measurements to include which students will "do well' as physicians. However, this is dependent upon first defining what we mean by 'good' or "do well." This requires performance criteria, i.e., some way of assessing practicing physicians and translating the results into measurements which can then be correlated with our predictor criteria.

At the research level, evaluative studies of the procedures used in the selection of medical students, especially the *Medical College Admission Test*, have, for the most part, shown that these predictors are at best marginally satisfactory (Garfield & Wolpin, 1961; Gee & Cowles, 1956; Glaser, 1951; Gottheil & Michael, 1957; Hill, 1959; Hutchins & Gee, 1961; Moore, 1952; Ralph & Taylor, 1950; Ralph & Taylor, 1962; Richards & Taylor, 1961; Schlesser & Roberts, 1941; Schumacher & Gee, 1961; Taylor, 1950; Taylor, et al., 1951, Wantman, 1953; Watson, 1955; Wesman, 1959; Wolpin & Garfield, 1960). Typically, these studies have used measures of persons' performance in medical school as criteria for assessing the predictive validity of their selection procedures. In the few studies that have been conducted in which performance after medical school was used as the criterion, not even "marginally satisfactory" results have been obtained (Peterson, et al., 1956; Second Institute on Clinical Teaching, 1961). For example, in studying the *Medical College Admissions Test*, Richards, Taylor, and Price (1962) found that its scores correlated (1) positively with grade point averages for the first two years of medical school; (2) at a zero-order level with grade point averages for the last two years of medical school; and (3) slightly negative with performance in internship. It is no wonder, then, that Stalnaker (1951) has criticized studies of selection procedures because of the lack of pertinence of their criterion measures to quality of performance as a physician. Thus, at least in the area of selecting people for admission to medical school, there is a need for studies exploring the relationship between medical student characteristics and later performance as a physician so that selection may be based on appropriate variables. As our Dean of Medicine stated: "We just do not know what characteristics are needed to be successful physicians, so we should begin without delay to find out these answers."

But before one studies techniques of selecting applicants for admission to medical school, he will need to have criteria of performance whereby he could determine if the selection techniques were pertinent or not. And it seems apparent that to be "on target," so to speak, such a criterion should pertain to the ultimate objectives of medical education--successful performance as a practicing physician--and not simply to performance in medical school.

Some might suppose that it would be enough to pick a few variables, such as income, patient mortality rate, or peer evaluations, to stand for our criteria of a physician's performance. However, when one speaks of "successful performance as a practicing physician," he should not be misled into thinking that this is a simple thing, easily measured by a few variables. This simple conception of the criterion is neither realistic nor adequate. Poets, philosophers, and laymen frequently emphasize the complexity of human behavior. Recently, the social scientist has added empirical support to this idea. For example, in studying the problem of developing a criterion of performance for physical scientists Taylor and his associates (1959, 1961, 1962) found that 50 criterion variables obtained from 8 different sources measured various aspects of some 14 distinct dimensions related to the productivity, creativity, and other contributions of scientists. Similarly, one would expect that at least as many distinct dimensions would be needed to describe the various aspects of the performance of physicians.

The present report describes a research project in which we have attempted to study the complexity of the performances of physicians in their practice and to measure as many of these performances as feasible in a first exploratory study. We felt that this project was needed as a first major step before conducting a study of predictors of performance. In other words, we had to first develop the targets to aim at in later studies of predictors of performance. However, we do not feel that in this project we have exhausted even a greater part of the possible criterion dimensions that could pertain to physicians' performances. We have been restricted in the number of variables we could study by the current limitations of electronic computers. We have also been somewhat limited in the kinds of variables which we could study because we did not want to impose too much upon the valuable time of the sizable group of physicians studied, nor did we wish to appear offensive or overly personal, thereby creating a bad feeling which would have hindered further progress in our project. Also, direct observations and certain other potential approaches were not feasible in this first extensive study of large numbers of physicians. But we have broken the ground in the study of physicians' performances and we expect that other studies will follow to explore further into areas of performance not yet adequately measured.

## Experimental Design:

We divided the physician-performance project into three phases, according to the group studied. In the first phase we studied full-time faculty members of the College of Medicine of the University of Utah. In the second phase we studied certified medical specialists in the urban areas of Utah (i.e., clinical faculty members and other urban specialists). And in the third phase we studied non-certified general practitioners throughout the state of Utah. Because we felt there were possible differences in the community settings of rural and urban general practitioners which would influence our findings, we decided to study the general practitioners in these settings separately. This led, therefore, in the third phase to two sub-studies, one of which was concerned with rural general practitioners and the other with urban general practitioners. With few exceptions, the methodology and procedures for all three phases was identical, although a fraction of the criterion measures used on one group had to be modified and supplemented to be suitable for another group.

## Data Collection:

We began each phase with a prolonged period of planning and collecting data, wherein information was obtained from several areas and from many different sources. First, a master list of all possible physicians who might be included in a given phase of the project was compiled. For example, for the first group of the College of Medicine full-time faculty, the list contained all persons on the faculty of the College of Medicine.

Then, an exhaustive search was made of the College of Medicine's official records and of all available compendium sources (e.g., Directory of the American Medical Association, American Men of Medicine, Directory of Medical Specialists) to find as much information as possible about each physician on the list. From these sources we obtained data about education and training, medical school activities, medical board certifications, selected biographical information, and lisitngs in honorary compendiums.

The most important step in the data collection was an intensive structured interview with the physicians in each of the project's phases. Therefore, we devoted considerable time and planning to this step. For example, we recognized that the professional responsibilities of physicians are very demanding and that generally they had little exposure to psychometric techniques and methodology. Therefore, we felt that an extra effort had to be exerted to approach the physicians in a manner that would give maximum assurance of their cooperation. Thus a letter, assuring anonymity in reporting any data collected and giving a fairly detailed layman's explanation of the purposes and methodology of the study, was sent to all physicians in each phase from the office of the Dean of the College of Medicine of the University of Utah. At the end of the letter a request was made for their participation by granting the project an interview of approximately one hour at their convenience (this included at any time, day or evening, and at any place of their choosing). In addition, the letter indicated that those who participated would be informed of the study's results. During the interview itself, the project interviewer encouraged the physicians to ask questions and offer suggestions or criticisms on any aspect of the investigation. Finally, an informal panel of selected physicians in the greater Salt Lake City area were consulted in the planning and development of all interview forms. Since 54% of the physicians in the state of Utah participated in one of the three studies this thorough approach appears to have been worth the effort it required.

A second critical aspect of the physician interview was that of the selection and training of the interviewers. All interviewers were graduate students in psychology with previous experience in interviewing, personnel work, or counseling psychology. Before interviewing any of the physicians in each phase of the study, each interviewer was given a general orientation to the project along with a detailed explanation about and training in the interview forms to be used. In particular we especially emphasized to the interviewers the purpose, meaning, and wording of the interview questions and the information that they were to collect from the physicians. After that, we held weekly meetings with the interviewers to review any problems and to make sure that the questions asked and the information collected were standard across interviewers.

The development of the interview forms also proved to be an ongoing task throughout the project. In each of the three phases, the project staff met with the Dean of the Medical School to isolate professional activities that are characteristic of medical practice in general and specific to the sample under consideration. Following this, the project staff constructed interview questions designed to gather data about these activity areas. Then the project staff took the completed interview question forms to the Dean of the Medical School for his evaluation. He especially considered the wording of the interview questions in terms of the vernacular of the medical profession. In addition he gave special attention to introducing the interview with questions which would help in establishing rapport with the physicians (e.g., "Do you feel the current emphasis on specialization is causing the physician to lose sight of the patient as a whole person?") With the suggested changes then incorporated into the forms, we then held a "trial run" with a few physicians selected to represent the entire gamut. We solicited from them their criticisms and suggestions about the interview, and when we felt that their comments were appropriate we then incorporated them in an appropriate manner in the interview forms. Lastly, a final version of the forms was developed and used in the interviews with the type of physicians under study at the time. As such, we obtained data about the physician's office practice (e.g., size, appointment schedule, house calls, type of illnesses treated), hospital affiliations and activities, consultation and referral practices, techniques employed in keeping abreast, medical and laboratory equipment, ancillary staff, use of drug detail men, emphasis on psychosomatic medicine, medical research activities, publications, honorary awards received, professional society memberships and activities, medical charity work, income, medical teaching responsibilities, avocational organizations memberships, vacation and leisure activities and other more specific areas. In addition, self-ratings and evaluations were obtained for medical contributions, characteristics of success in medicine, and degree of satisfaction derived from various medical activities.

Some 200 possible measures relevant to physician performance from official records, compendium listings, and the interview were collected on the doctors in each phase of the investigation. The computer program used to analyze the data would allow only a maximum of 80 variables per problem[1] (admittedly a large capacity but not large enough to handle all the data we had collected). Thus for each phase the analysis reported in this paper was based on those separate or combined variables which the project staff subjectively judged to be most appropriate as criterion measures of physician performance.

Data Analysis:

In the act of examining any domain of inquiry, especially something so vast and yet so intricate as physician performance, we find ourselves confronted with a mass of observations which come to us unorganized and often in chaotic form. It is through appropriate data analysis that we seek to discover order in our observations. In our present project, in which human behavior and accomplishments were subjected to a "microscope," we have utilized statistical methods to reduce the vastness of our data (more than 20,000 observations) to manageable form. In so doing, we have employed essentially three statistical techniques or methodologies: standardizing the scores to a uniform scale, correlation, and factor analysis.

---

[1] All computations were made at the Western Data Processing Center, University of California at Los Angeles, Los Angeles, California.

The first practical consideration in our data analysis was to attempt to make the scores obtained on each of the 80 measures of physician performance reasonably comparable across measures: e.g., so that a score of 55 on one measure would represent approximately the same level of performance as a score of 55 on another measure. In so doing, we selected a standard score scaling technique (T scaling) that would provide units of equal size as well as equal averages and variability with more comparable ranges and distributions of scores. As such, all raw scores for every measure of performance were converted to these standard type of scores (Guilford, 1950, pp. 296-302) whereby each score measuring physician performance would fall within a range from 0 to 100 with a mean of 50 and standard deviation of 10.

Once the raw scores for each of the 80 measures of performance were converted to these comparable scores, the next statistical step in organizing our data was to obtain a measure of the degree of relation or association between each of the performance measures. For example, we wanted to determine to what degree, if any, physicians who published extensively were also active in scientific and professional societies. In so doing, we computed statistical "coefficients of correlation" between each of the measures and every other measure of performance (see Tables III, VII, XII, XVI, and XX at the end of Chapters II, III, and IV).

With measures of the degree of association between each of the performance measures computed, we could have stopped our data analysis. However, if we had done so this report would have been unbearably long. We would have had to sequentially describe and interpret each of the 80 performance measures in terms of its relationship with the other 79 measures of performance. All totaled, 3,160 lengthy descriptions of each of the correlation coefficients would have been presented for each phase of the project (see Tables III, VII, XII, XVI, and XX to get an idea of the problem). This obviously would have been a relatively low order of organization of our data. Fortunately, at this stage of our analysis we were able to turn to a third statistical technique, that of factor analysis, whereby we could organize our data into a few, say 20 or 30, separate and conceptually manageable categories.

Factor analysis is a technique which will eventually enable us, in communicating our results to medical educators, to present (anonymously) a considerably reduced but representative profile of thep erformance and accomplishments of each physician studied. In a more technical way it could be described as a statistical tool which assists the researcher in categorizing a vast, complex, and apparently nearly chaotic phenomenon, such as our total set of measures of physician performance, into a limited number of comprehensive concepts or "factors." It starts with a table of interrelations (intercorrelations) between variables that are to be so analyzed. In the case of the present project, this was the second step in our data analysis (see Tables III, VII, XII, XVI, and XX). What it does in its computations is to observe and analyze the pattern of intercorrelations among the 80 variables and isolate several "clusters" (factors) of variables that are relatively independent of other clusters of variables that are interrelated. In so doing, the complexity of the intercorrelation matrix is reduced to a few categories or factors which can then be interpreted in terms of their underlying nature. In the following chapters a rather thorough introduction will be given to the reader to factor interpretations. [2]

In review, the data analysis for each phase of the project had been primarily concerned with reducing the initially vast and almost unmanageable array of data into a smaller number of conceptually manageable categories. In its beginning or raw data form we had collected literally tens of thousands of measures on individual physicians in our lengthy list of measures of performance. By standardizing these raw scores we were able to make comparisons from one measure to the next. Then we determined the relationship between each and every pair of these 80 measures of physician performance. Finally, through factor analysis the initial complexity was further reduced to a mere handful of meaningful categories which could then be dealt with in simpler, more straightforward ways.

In summary, the typical procedures for evaluating selection techniques of medical schools has been questioned in that the usual criteria, measures of educational and training performance, are of unknown value in terms of their relationship to the on-the-job performance of practicing physicians. A first step in determining this relationship is that of exhaustive research on the criterion problem itself, the problem of building yardsticks and measuring physician performances. Toward this end, the present project, guided by the assumption that physician performance is a complex, multi-variate phenomenon, has collected extensive data from a variety of sources on physicians in both specialized and general practice and full-time College of Medicine faculty members. In the following chapters, a detailed statement of the subjects and results is provided for each of the samples investigated.

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[2] For the statistically orientated, in each phase of the study the 80 variable inter-correlation matrix was factor analyzed by the principal components method (1.00 was placed in the diagonal cells of the matrix and all factors having a corresponding eigenvalue greater than 1.00 were extracted) (Harmon, 1960). These factors were then rotated to a final solution using the verimax analytic orthogonal rotational solution (Kaiser, 1958).

## Chapter II

## An Investigation of the Criterion Problem for a Medical School Faculty

There can be little doubt that the most crucial person in any educational program is the teacher. This fact has been recognized in a large number of past studies of teachers' performance. These studies have been biased, however, in that they have involved almost exclusively elementary and secondary school teachers. Only a few studies have been done on college teachers, and almost no studies have been made of the performance of teachers in graduate and professional schools. Yet, under the impact of problems increasingly facing our society, both graduate and professional education are becoming more and more crucial. There is, therefore, a strong need for knowledge about the dimensions and correlates of the performance, accomplishments, and contributions of graduate and professional educators. The aim of this phase of the project was to provide some of this needed knowledge for medical education.

### Subjects:

The population studied in this chapter consisted of the 118 members of the full-time faculty of the University of Utah College of Medicine during the 1961-1962 academic year who had earned a doctoral degree, either Ph.D. or M.D. (or both).[3] Letters signed by the Dean of the College of Medicine were sent to these 118 faculty members inviting them to participate in this project, and to grant an interview lasting approximately one hour. A second letter was sent to those faculty members who did not respond to the first letter, and a phone call was made to those who made no response to the second letter. As a result of good humored persistance, short of undue pressure, all either agreed or definitely refused to participate. Ultimately there were 102 faculty members who agreed to participate and this group, therefore, was the sample actually studied in detail in this phase of the research. Within this group of 102, there were 73 participants with an M.D. degree (or both an M.D. and Ph.D. degree) and 29 participants with a Ph.D. degree.

### Criterion Measures:

Eighty scores relevant to physician performance obtained from a variety of sources, including 2 scores measuring performance in education, were analyzed. The first 18 of these scores were obtained from the files, staff, and students of the College of Medicine, including 5 scores from official records, 9 scores obtained from the curriculum vita of each participating faculty member, 1 score based on listings in honorary compendiums, such as Who's Who in American Medicine, 1 score based on peer nominations as an outstanding contributor to science, medicine or the University of Utah, 1 score based on student nominations as an outstanding teacher, and 1 score based on a rating by the department heads of the College of Medicine for "clinical excellence." The next 50 scores were obtained during an interview with each faculty member, and included 1 score based on income, 2 scores having to do with society memberships, 37 scores based on answers to direct questions asked in the course of the interview, and 10 scores from a special questionnaire dealing with sources and degrees of occupational satisfaction. The final 12 scores were obtained from heterogeneous sources, and included 2 ratings by the project researcher who conducted the interview, 1 score involving ratings by a selected panel of judges of "overall performance" as indicated by all of the above 70 scores, 1 score for the degree of willingness with which each physician participated in this research, 6 "control" scores involving such variables as years of experience, and 2 scores on performance in education, 1 of them as an undergraduate student and 1 as a medical (or graduate) student. The exact titles of the 80 variables and the sources from which they were obtained are listed in Table I.[4] Details of the system by which raw scores were derived for each variable are presented in Appendix A.

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[3] The full-time medical faculty of the College of Medicine was studied first in this project because its members were felt to resemble the sample of research scientists whose performances we had already studied (Taylor & Barron, 1963, Chapt. V).

## Representativeness of the Sample:

Data on the 16 faculty members who did not participate were available on the 5 scores obtained from offical records, the 6 control scores, the score based on citations in honorary compendiums, the rating by the department head, and the peer and student nomination scores. On these 15 scores, t tests were made comparing the group that did not participate in the interviews with the group that did participate. Out of the 15 possibilities, only one significant difference was found; this lone difference indicated that the faculty members of the group which did not participate obtained their first doctoral degree at a younger age than did the faculty members of the group which did participate. Since the single significant difference is on an academic control variable, it appears that the sample of 102 faculty members that did participate is not seriously biased.

## Results:

The factor analysis of the data obtained from the participating full-time faculty members yielded an unexpectedly large number of factors, specifically 25 (with eigenvalues greater than 1.00---see Table II) which were included in the final analysis. See Table III at the end of the chapter for the 80 variable intercorrelation matrix upon which the factor analysis was based. The unrotated factor matrix is presented in Table IV; the rotated factor matrix, together with the communality for each variable, is presented in Table V.

In the material that follows the 25 rotated factors are described and interpreted. In so doing, each factor is described as a separate entity. However, in terms of practical application and interpretation the reader is reminded that a given physician may well be characterized by several of the factors, rather than just one as one would be led to conclude on the basis of the descriptions and interpretations presented.

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[4] All tables for this sample are presented at the end of this chapter.

Factor A can be described best as Academic Seniority. In comparison with the other factors, it is a relatively general one, since more than half of the 80 variables have loadings greater than .20 on this factor. This factor includes those variables which relate to success and academic rank among the Medical School faculty. Chief among these variables are age and experience. In general, one does not rise in academic rank without a certain degree of maturity and several years of various experiences. But mere age and experience are not the only correlates with academic rank. To achieve rank one must be producing scientifically, conducting research, publishing papers in scientific or professional journals, and attending and reading papers at scientific or professional meetings. Certain responsibilities will come with rank: a ranking member of the faculty will belong to and chair more committees in the Medical School. But there will also be rewards and recognitions which go with academic rank, such as greater net income from the medical profession, than those of lesser rank. He will more likely be invited to serve as an editor for scientific journals or on scientific advisory boards. He will find it easier to obtain more research grants than those of lesser academic rank--or he who gets promotions is more capable of getting research grants. Students will tend to regard him as a better teacher. And he will also be seen by his colleagues as having made a significant contribution to medicine.

Factor B appears to involve Professional Recognition for Achievements. Persons scoring high on this variable have received a number of prestigeful honors and are nominated as outstanding by both peers and students. They have a higher than average output of written material, especially in recent years. Since their work has been written up in mass media more often than average, there is a slight indication that their work has been in areas that have caught popular attention.

Factor C involves a greater-than-average use of scientific journals, but a smaller-than-average use of other techniques as a secondary method of keeping abreast. Persons scoring high tend to be less experienced, but more productive, and are held in higher esteem by their colleagues. Overall, the pattern of loadings suggests a "comer," i.e., a new researcher and scholar who has not yet arrived but shows promise of doing so. While this is a pattern which is difficult to summarize with a terse title, one possibility might be Regular Review of Scientific Literature. This "well-readness" appears to involve basic sciences to a greater degree than more applied research (in such areas as clinical techniques and methodology).

Factor D is characterized mainly by its two largest loadings which indicate that persons scoring high on this factor received fellowships during their training and finished their training rapidly and therefore young. In other words, as students they effectively manipulated their academic situation, although they did not get particularly high grades. Considering all these results, this factor might most appropriately be be titled *Early Academic Progress and Recognition*. However, there is some indication that high scorers have also been able to make later contributions, since they are awarded a greater than average number of relatively large research grants and are viewed as outstanding, both by their colleagues and by a panel of expert judges.

Factor E appears to involve *Contributions as an Editor,* since the most outstanding characteristics of high scorers are that they have been offered and have accepted a greater than average number of journal editorships. As might be expected, they derive a greater than average amount of satisfaction from writing and from reading. This suggests that they would also be high scorers on writing and reading communication abilities (Taylor et. al., 1958). Contributions as an editor are regarded as important, since high scorers are both nominated by their peers as important contributers and rated as successful by a panel of expert judges.

Factor F involves *Self-Evaluated Accomplishment in Research* since the variable with the highest loading indicates that faculty members scoring high on this factor gave a larger-than-average *number* of *research* contributions when asked what their most important contributions have been. As with most self-evaluations, there appears to be considerable correspondence to reality, since these contributions are judged by others to be high in quality, and high scorers are awarded research grants and serve on advisory boards. High scorers on this factor tend to have Ph. D. degrees rather than M. D. degrees.

Factor G has its highest loading on the variable measuring the degree to which the faculty member himself estimates that his future publications will be comprehensive or full scale reports rather than brief reports or abstracts. This is, no doubt, related to the fact that they have an above average number of research grants, and that these grants are relatively large ones. High scorers on this factor have tended to be the junior authors on past publications. They are, however, considered to be outstanding contributers by their colleagues. This factor might best be summarized as *Self-Estimated Comprehensiveness of Future Publications*.

Factor H is concerned with *Research Consulting*, and somewhat more informal consulting than formal. This suggests that the high scorer is approachable at a personal level, and is quite willing to talk with and advise other people about research problems. This is true in spite of the fact that the high scorer himself has been more productive in research and presumably busier. The high scorer is more likely to be a Ph.D. than an M.D., and seems to be consulting as a basic scientist rather than as a clinical physician.

Factor I is characterized by a high *negative* loading on liking for actual practice as reported on a self-rating. The best title for this factor might be *Rejection of Actual Practice*. Persons scoring high on this factor also tend to somewhat dislike teaching, have a large number of relatively sizable research grants, and expect to produce numerous publications in the immediate future, even though they have not given any particular evidence of productivity in the past. There is some suggestion of a person who is seeking out the laboratory because of a dislike of activities requiring a great deal of interpersonal contact.

Factor J might be doubly titled Prolonged Residency Training--Excellence as a Clinician. High scorers have a more varied and longer than average background of hospital experience and are considered to be outstanding clinicians by their College of Medicine department heads. They are frequently called into medical consultation, but are less productive of publications. Thus, their orientation is primarily that of a physician rather than a scientist or teacher, even though they are full-time faculty members. It is obvious that a College of Medicine needs some persons with this orientation among its staff.

Factor K can best be described as Level of Medical Specialization and Attainment. Persons scoring high tend to have a more-than-average number of high quality medical specialty certifications. They have spent more (prerequisite) years in internship and residency than average. The fact that they have a larger-than-average number of listings in honorary compendiums is at least partly due to the fact that passing a specialty board is a requirement for being included in some of the compendiums used. Persons scoring high on this factor also tend to derive more satisfaction from teaching than from research. There is some evidence in the lack of sizable loadings for variables having to do with research and teaching productivity that the high scorers on this variable have expended much of their psychic energies getting their specialty certifications and, consequently, are content to focus largely on maintaining their status in their highly specialized practices.

Factor L has its highest loadings on variables having to do with clinical teaching and consulting on medical problems. As expected, persons scoring high on this factor tend to have an M. D. degree. Since there are no large loadings on variables having to do with research, the overall impression suggested by this factor is that it describes a person who focuses on transmitting known answers rather than searching for new or better answers via medical research. Thus, persons scoring high on this factor are serving a function vital to all of education (Taylor, et. al., 1962) of "bridging the gap," especially in terms of communication between basic research and medical practice. Their serving in this type of activity is liked by medical students, and is rewarded with a higher-than-average College of Medicine income. The high loadings for consulting activities suggest that this factor also involves a form of visibility within the medical faculty, or perhaps a good professional appearance. Communication ability is a common thread running through most variables loading on this factor. Overall, an obvious title for this factor could be Clinical Teaching and Consulting.

Factor M appears to be Academic Orientation--Teaching Excellence. High scorers have academic rather than purely research College of Medicine appointments, are responsible for a large number of courses, and are considered to be an outstanding teacher by their students. They are not outstandingly productive of publications and are regarded as average clincians. Thus, they are making their contributions primarily as teachers rather than as scientists or physicians. It is interesting to note that fellow College of Medicine faculty members consider this type of contribution neither outstanding nor unimportant.

Factor N rather clearly involves Teaching Responsibilities, since the variables with the highest loadings are those dealing with course responsibilities. High scorers also have more than average positions on advisory boards. They are regarded as above average clinicians by their College of Medicine department heads, but are viewed as neither outstandingly good nor exceptionally poor by their students. Overall, the high scorer seems to be a person who is fully occupied in teaching and consequently exerts only a minimal effort in other areas, such as medical research.

Factor O appears to involve Administrative Contributions to the College of Medicine. Its largest loadings indicate that high scorers derive a greater than average amount of satisfaction from "miscellaneous" administrative chores (which are necessary but not popular or prestigeful) and have been quite active in the role of committee chairman in the various College of Medicine activities. The contributions of the person scoring high on this factor are generally confined to a local, rather than state or national level, since he has a smaller than average number of memberships and offices in scientific and professional societies. Overall, the factor appears somewhat related to the Current Organizational Status factor obtained in one of the present authors' study of physical scientists (Taylor et al., 1961).

High loadings on Factor P indicate rapid promotion in the medical school, preceded by frequent position changes of short duration. Because no single variable, such as research or teaching, distinguishes physicians scoring high on this factor, there is some suggestion of a faculty member who is "playing the medical faculty ropes" by effectively ascertaining and meeting the organizational requirements for promotion in the College of Medicine. Thus, an appropriate title for this factor is Rate of Professional Mobility and Advancement. Alternatively, however, consideration should be given to another possibility that high scorers are in certain specialty areas, such as radiology and internal medicine, where the demand tends to exceed the existing supply of qualified medical college staff members.

Factor Q is complex and does not readily lend itself to interpretation. The two most salient points are that high scorers have held a considerable number of scientific and professional society offices and College of Medicine committee chairmanships; they also tend to respond to questions concerning their contributions to science, medicine, or society with accomplishments that are not directly related to medical research or practice. Moreover, other variable loadings show a lack of productivity in research and below average ratings by their medical students. Nevertheless, these persons have distinguished themselves by somehow attaining high status positions on the College of Medicine faculty. With these considerations in mind, a factor of Status-Seeking Tendencies and Skills is suggested.

Since Factor R's highest loadings were on variables dealing with the number of speaking engagements to lay audiences and amount of press coverage of medical research, it could be interpreted as a Public Recognition for Contributions factor. Additional support is given by moderate loadings on the social organization membership variable and the tendency of those scoring high, despite a lack of personal satisfaction from research activities, to have recently produced a relatively large number of publications in which they have been either the only or the senior author. In general, the factor pattern describes persons seeking status outside of the medical profession via research activities in which they are not greatly ego-involved.

Factor S rather clearly involves Participation in Professional Societies. Persons with the highest scores on the factor not only attend numerous scientific and professional society meetings but also derive a great deal of satisfaction from participating in such activities. However, their current memberships tend to be in societies that are relatively low in prestige value. These persons also enjoy consulting activities, but are regarded as below average clinicians by their research oriented College of Medicine department heads. The overall impression suggests that individuals typified by this factor are striving to maintain visibility within the profession but without necessarily exerting their energies in research, teaching, or medical practice.

Factor T has high loadings on both the number of current memberships and the number of offices held in civic and political organizations. Accordingly, it could be titled Civic Participation. This type of organizational involvement is, of course, somewhat of an extraneous activity for a College of Medicine's faculty members. In this connection, it is interesting to note that high scorers on this factor tend to have produced a lower than average number of recent publications and are considered by their department heads to be below average clinicians. Thus, there is a suggestion of an individual who has achieved little status in the College of Medicine, but who alternately does actively seek civic and political recognition outside of the University setting.

Since the variables with the highest loadings on Factor U are a composite measure of professional satisfaction and three self-ratings for degree of satisfaction derived from research, administrative, and teaching activities, it should be titled something to the effect of Overall Occupational Satisfaction. Inversely, at the opposite (negative) end of the factor one gets the impression of an unhappy man who has not found a suitable niche for himself in the medical profession. The most striking thing about this factor is that the composite measure of professional satisfaction is factorially simple, appearing only on this factor, and, therefore, essentially independent of the other numerous aspects of performance analyzed in this report. If this finding--that satisfaction derived from a vocation is independent of level of performance in the vocation--should be found to be consistent both within the medical profession and across other occupational groupings, a revision in some present theories and application of vocational counseling would be needed.

Factor V is rather clearly a Participation in Social Organizations factor. Its two highest loadings are on the performance measures having to do with participation in social organizations. As in Factor S above, persons characterized by this factor have also held a greater than average number of society offices, but in societies with relatively low status. These findings, in combination with the combined negative loadings for productivity of publications, suggests that a high scorer may be somewhat of a "glad-hander" who prefers to spend so much of his time fulfilling social obligations that he does not have the remaining energy needed to become an effective scholar or researcher.

Factor W mainly involves the impact the faculty member had on the person who interviewed him for this research. Specifically, the project interviewers generally rated individuals characterized by this factor as quite likeable. It would seem to follow that these physicians move easily among people and have considerable social skills. Thus, an appropriate label for this factor is that of Interviewer's Rating of Likeability. Also, it is interesting to note that this factor is independent of Factor V, Off-the-Job Socializing. It is commonly assumed that persons who are socially adept in one situation will be so in others. However, the results obtained with this sample suggest that what has been taken to be the general ability of gregariousness or likeability is actually more than one attribute, each of which may be somewhat situation-bound.

The major loading on Factor X is for the criterion variable dealing with the extent to which the faculty members fulfilled the various requirements in participating in this project. An obvious interpretation for the factor is that of Project Cooperativeness. Moreover, a review of the secondary loadings indicates the high scorer is frequently cited in honorary compendiums reviewed, has an above average number of active research grants, has received considerable press coverage of his research, and has major responsibilities in a number of the College of Medicine classes. Overall, the factor pattern could characterize faculty members who are relatively successful in their academic situation and secure enough in their accomplishments to willingly cooperate with a project in which performance is knowingly evaluated.

Factor Y most clearly concerns Achievement in Education: its two highest loadings are on undergraduate school grades and grades achieved in medical (or graduate) school. The secondary loadings show that persons scoring high tend to dislike consulting and administrative activities and whatever research grants they now have are relatively large. However, and most significantly, high scorers have not distinguished themselves in anything else; the 24 factors obtained in this phase of the project, including those measuring the more important professional contributions and accomplishments, are essentially unrelated to this dimension of academic achievement. In this regard, it is emphasized that it becomes difficult, if not unrealistic, to attempt to justify the traditional liberal arts argument that education, even professional training such as medical education, is a worthy activity in and of itself whether or not it is related to other later attainments in the work-a-day world. Also, a brief examination of these results makes it difficult to explain them away by the all too frequent rationalization of restriction of range. First, by accepting a criterion of a factor loading of .20 or greater we find that no single measure of faculty performance fell into more than 10 of the 25 factors (categories), the average number being approximately 4, and medical school or graduate school grades appeared in only 2 of the 25 factors. It is therefore quite unlikely to expect grades when unrestricted in range to suddenly appear in as many as 4 of the factors and the probability would be extremely low that grades would fall into all 25 factors. Furthermore, it is most difficult to argue for this latter result to occur; for to do so one would have to say that all the bases on which grades were restricted in range are all those bases which count in job performance (not in school performance). In brief, such results strongly suggest the criteria currently utilized in the selection and evaluation of medical school students should be searchingly examined.

## Conclusions:

In retrospect, the single most important finding for this phase of the project was the great complexity of the total criterion area for the College of Medicine faculty studied. There was not a great deal of overlap between the 80 different criterion measures of performance utilized. When one realizes that approximately one independent factor or dimension was obtained in the analysis for every three of these performance measures, the real complexity of the criterion problem emerges forcefully. Once this is recognized, it is apparent that attempts to measure performance by a single variable, such as peer evaluations, or even by a small number of variables (or, for that matter, a single factor or a small number of factors) will undoubtedly oversimplify, and perhaps distort, the criterion problem. Fortunately, one need not be overwhelmed by the criterion's inherent complexity. As demonstrated in the foregoing material, the factor analysis techniques employed on these data provide powerful and interesting analytical views of the problem, together with a relatively clear and sound basis for organizing these measures of physician performance into shortened profiles or descriptions of performances and accomplishments.

Secondly, in view of the number of meaningful factors obtained, it appears that there are several outlets through which medical faculty members can expend their energies and achieve recognition. Apparently, then, both the type of outlets one chooses through which to express himself and the effectiveness with which one's efforts are put to use in these outlets are important considerations in assessing the accomplishments and contributions of an individual in a professional area. Thus, both of these considerations of complexity and of energy investment areas should be used in evaluating current faculty members for retention and promotion and in judging the experience and attainment of candidates for appointment to the faculty.

Finally, the criterion complexity revealed by these results has clear implications for the prediction of the performance of medical school faculty members. It is unlikely that most of the criteria found in this study will be highly correlated with the usual predictors, such as grades and typical aptitude tests which are highly dependent upon verbal abilities. For example, in this phase of the project, medical school performance was found to be independent of all of the other factors related to performance as a medical educator. Stated alternately, grades in medical school were found to be inadequate as a substitute or intermediate criteria for any or all of the on-the-job performances and accomplishments of medical faculty members. On the other hand, recent research indicates more promising approaches can be used to predict future performance, e.g., biographical inventories have been used in the prediction of multiple independent criteria, yielding cross-validities ranging from .40 to .60 against a variety of on-the-job measures of the creativity and productivity of scientists (Ellison & Taylor, 1962). Thus, in the opinion of the authors self-reports and self-descriptions of various types might be one kind of predictor that is likely to yield useful validities against the criteria isolated in this project (Taylor, et al., 1961; Taylor & Barron, 1963).

## Table 1

### Title and Source for Each Variable for College of Medicine Full-Time Faculty

| | Title | Source |
|---|---|---|
| 1. | Present Academic Rank | Official Records |
| 2. | Average Number of Medical School Committee Memberships Per Year for Last Five Years | Official Records |
| 3. | Total Number of Medical School Committee Memberships During Last School Year | Official Records |
| 4. | Average Number of Medical School Committee Chairmanships Per Year for Last Five Years | Official Records |
| 5. | Total Number of Medical School Committee Chairmanships During Last School Year | Official Records |
| 6. | Total Number of Publications in Scientific and Professional Journals During Career | Vita |
| 7. | Average Number of Journal Publications Per Year Since Receiving M.D. or Ph.D. | Vita |
| 8. | Average Career Level of Contribution to Publications as Indicated by Senior vs. Junior Authorship Status | Vita |
| 9. | Promotion Rate in College of Medicine | Vita |
| 10. | Total Number of Professional Positions Since Receiving M.D. or Ph.D. | Vita |
| 11. | Mobility Rate in Professional Positions Since Receiving M.D. or Ph.D. | Vita |
| 12. | Total Number of Hospitals Employed in During Residency | Vita |
| 13. | Total Number of Years Spent in Residency | Vita |
| 14. | Number of American Board Specialty Certifications | Vita |
| 15. | Average Quality of Specialty Certifications | Vita and Expert Judges |
| 16. | Total Number of Listings in Honorary Compendiums | Compendiums |
| 17. | Number of Times Nominated as Outstanding Contributor by Colleagues in College of Medicine | Colleagues |
| 18. | Number of Times Nominated as Outstanding Teacher by Medical Students | Medical Students |
| 19. | Department Head's Rating of "Clinical Excellence" | Department Head |
| 20. | Number of Current Memberships in Scientific and Professional Societies | Societies |
| 21. | Average Judged Quality of Societies in Which Membership is Current | Societies and Expert Judges |
| 22. | Net Income from Medical Profession | Income |
| 23. | Self-Reported Number of Research Contributions Made to Medicine | Interview |
| 24. | Average Judged Quality of Self-Reported Research Contributions | Interview and Expert Judges |
| 25. | Self-Reported Number of Non-Medical Contributions to Society | Interview |
| 26. | Total Number of Current Research Grants | Interview |
| 27. | Average Amount of Current Research Grants | Interview |
| 28. | Total Number of Research Grants Received During Career | Interview |
| 29. | Total Number of Publications in Last Two Years | Interview |
| 30. | Self-Estimated Number of Publications in Next Two Years | Interview |
| 31. | Self-Estimated Comprehensiveness of Publications in Next Two Years | Interview |
| 32. | Total Number of Papers Presented at Scientific and Professional Meetings During Career | Interview |
| 33. | Average Number of Speeches to Laymen Groups Per Year | Interview |
| 34. | Number of Times Research Has Been Reported in Mass Media During Career | Interview |
| 35. | Average Number of Hours Per Week Spent in Clinical Teaching of Medical Students | Interview |
| 36. | Average Number of Formal Medical Consultations Called Into Annually | Interview |
| 37. | Average Number of Informal Medical Consultations Called Into Annually | Interview |
| 38. | Average Number of Society Meetings Attended Annually | Interview |
| 39. | Number of Current Memberships in Civic and Political Organizations | Interview |
| 40. | Number of Offices Held in Civic and Political Organizations | Interview |
| 41. | Total Number of Scientific and Professional Awards Received During Career | Interview |
| 42. | Average Judged Quality of Awards Received | Interview and Expert Judges |
| 43. | Number of Subscriptions to Scientific and Professional Journals | Interview |
| 44. | Number of Scientific and Professional Journals Reviewed Regularly | Interview |
| 45. | Number of Articles in Scientific and Professional Journals Read in Detail Each Month | Interview |
| 46. | Number of Techniques Other Than Journals and Meetings Used in Keeping Abreast of Field | Interview |
| 47. | Total Number of Offices Held in Scientific and Professional Societies During Career | Interview |
| 48. | Number of Times During Career Invited to Serve as Editor of Scientific or Professional Journal | Interview |
| 49. | Number of Acceptances of Invitations to Serve as Editor | Interview |
| 50. | Number of Courses in College of Medicine for Which Faculty Member is Primarily Responsible | Interview |
| 51. | Number of Courses in College of Medicine for Which Faculty Member is a Supplementary Instructor | Interview |
| 52. | Number of Times During Career Invited to Serve on Scientific and Professional Advisory Boards | Interview |
| 53. | Number of Acceptances of Invitations to Serve on Advisory Boards | Interview |
| 54. | Number of Current Memberships in Social and Avocational Organizations | Interview |
| 55. | Number of Offices Held in Social and Avocational Organizations | Interview |
| 56. | Total Number of Fellowships Received | Interview |
| 57. | Average Number of Formal Research Consultations Called into Annually | Interview |
| 58. | Average Number of Informal Research Consultations Called into Annually | Interview |
| 59. | Self-Rated Liking for Actual Practice of Profession | Questionnaire |
| 60. | Self-Rated Liking for Teaching | Questionnaire |
| 61. | Self-Rated Liking for Research | Questionnaire |
| 62. | Self-Rated Liking for Studying and Reading Professional Literature | Questionnaire |
| 63. | Self-Rated Liking for Professional Consulting | Questionnaire |
| 64. | Self-Rated Liking for Participation in Professional Societies | Questionnaire |
| 65. | Self-Rated Liking for Writing for Professional Literature | Questionnaire |
| 66. | Self-Rated Liking for Professional Administrative Activities | Questionnaire |
| 67. | Self-Rated Liking for Miscellaneous Professional Activities | Questionnaire |
| 68. | Overall Occupational Satisfaction | Questionnaire |
| 69. | Rating of Overall Performance Based on All of Above Information | Expert Judges |
| 70. | Interviewer Rating of Cooperation | Project Interviewer |
| 71. | Interviewer Rating of Likeability | Project Interviewer |
| 72. | Extent to Which Willingly Met Participation Requirement for This Project | Project Records |
| 73. | Undergraduate Grade Point Average | Official Transcripts |
| 74. | Medical or Graduate School Grade Point Average | Official Transcripts |
| 75. | Age at Which Received M.D. or Ph.D. | Control Variables |
| 76. | Years of Experience Since Receiving M.D. or Ph.D. | Control Variables |
| 77. | Total Number of Undergraduate and Graduate Degrees | Control Variables |
| 78. | Age | Control Variables |
| 79. | Academic Appointment Rather Than Research | Control Variables |
| 80. | M.D. Degree Rather than Ph.D. | Control Variables |

## Table II

### Eigenvalues and Cumulative Proportion of Variance Accounted for For Full-Time Faculty

| Factor | Eigenvalue | Cumulative Proportion of Variance |
|---|---|---|
| A | 13.84 | .22 |
| L | 6.04 | .31 |
| P | 4.30 | .38 |
| I | 3.50 | .43 |
| T | 2.83 | .48 |
| U | 2.76 | .52 |
| F | 2.47 | .56 |
| B | 2.27 | .60 |
| W | 2.17 | .63 |
| C | 2.09 | .66 |
| Q | 2.00 | .69 |
| E | 1.82 | .72 |
| K | 1.77 | .75 |
| N | 1.68 | .78 |
| O | 1.67 | .80 |
| V | 1.54 | .83 |
| D | 1.48 | .85 |
| H | 1.40 | .87 |
| S | 1.30 | .89 |
| J | 1.28 | .91 |
| X | 1.22 | .93 |
| G | 1.16 | .95 |
| Y | 1.12 | .97 |
| M | 1.06 | .98 |
| R | 1.03 | 1.00 |

# Table III

### Intercorrelations of Variables for Full-Time Faculty

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | | | | | | | | | | | | | | | | | | | |
| 2 | 39 | — | | | | | | | | | | | | | | | | | | |
| 3 | 56 | 72 | — | | | | | | | | | | | | | | | | | |
| 4 | 56 | 59 | 61 | — | | | | | | | | | | | | | | | | |
| 5 | 37 | 51 | 51 | 66 | — | | | | | | | | | | | | | | | |
| 6 | 69 | 42 | 41 | 40 | 34 | — | | | | | | | | | | | | | | |
| 7 | 40 | 14 | 15 | 14 | 13 | 63 | — | | | | | | | | | | | | | |
| 8 | 03 | 06 | 07 | 00 | -08 | 03 | -03 | — | | | | | | | | | | | | |
| 9 | -23 | -26 | -17 | -31 | -24 | -14 | -02 | 05 | — | | | | | | | | | | | |
| 10 | 43 | 33 | 31 | 22 | 16 | 30 | 04 | 17 | 47 | — | | | | | | | | | | |
| 11 | -14 | -14 | -09 | -13 | -10 | -10 | -14 | -06 | 72 | 53 | — | | | | | | | | | |
| 12 | 00 | 06 | 03 | 09 | -04 | -06 | -17 | -01 | 01 | 10 | 06 | — | | | | | | | | |
| 13 | -15 | 10 | -06 | 00 | 02 | -27 | -37 | 05 | -03 | 01 | 03 | 51 | — | | | | | | | |
| 14 | 28 | 32 | 13 | 12 | 19 | 14 | -03 | 07 | -06 | 27 | 07 | 07 | 14 | — | | | | | | |
| 15 | 26 | 26 | 18 | 22 | 24 | 11 | -07 | 00 | -05 | 27 | 00 | 03 | 23 | 04 | — | | | | | |
| 16 | 62 | 50 | 49 | 52 | 30 | 55 | 37 | 14 | -04 | 37 | -06 | -06 | -12 | 28 | 34 | — | | | | |
| 17 | 43 | 38 | 39 | 26 | 38 | 52 | 43 | -03 | 03 | 25 | -05 | -06 | -10 | 11 | 14 | 32 | — | | | |
| 18 | 39 | 35 | 41 | 20 | 23 | 37 | 22 | -10 | 01 | 26 | 06 | 01 | 07 | 15 | 15 | 25 | 39 | — | | |
| 19 | 37 | 26 | 31 | 35 | 26 | 18 | 02 | -05 | 03 | 19 | -03 | 08 | -02 | 13 | 10 | 36 | 24 | 15 | — | |
| 20 | 43 | 26 | 36 | 29 | 16 | 43 | 27 | 05 | 04 | 39 | 06 | -04 | -30 | 27 | 21 | 38 | 35 | 18 | 10 | — |
| 21 | 36 | 16 | 17 | 21 | 07 | 41 | 35 | -03 | -03 | 12 | -07 | -08 | -21 | -01 | -09 | 34 | 29 | 16 | 27 | 11 |
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| Variable | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
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| Variable | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
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| 68 | 48 | 13 | 15 | 19 | 28 | 38 | 16 | — | | | | | | | | | | | | |
| 69 | 29 | 09 | -15 | 01 | 22 | -10 | 05 | -03 | — | | | | | | | | | | | |
| 70 | -17 | 11 | 23 | 01 | -10 | 05 | -04 | -09 | 04 | — | | | | | | | | | | |
| 71 | 00 | 05 | 14 | -11 | -13 | -03 | 03 | -05 | 02 | 61 | — | | | | | | | | | |
| 72 | 22 | 07 | -02 | 05 | 06 | -03 | -01 | 05 | 30 | -07 | -08 | — | | | | | | | | |
| 73 | 13 | 03 | -19 | -07 | -06 | 01 | -06 | 06 | -14 | -30 | -19 | 05 | — | | | | | | | |
| 74 | 16 | 04 | -21 | 07 | -08 | -15 | -01 | -01 | 16 | -11 | -14 | 17 | 29 | — | | | | | | |
| 75 | 08 | 10 | 04 | 07 | -09 | 06 | -08 | 18 | -25 | -05 | 09 | 08 | -04 | 09 | — | | | | | |
| 76 | -04 | 06 | 05 | -09 | 07 | 03 | 19 | -04 | 41 | 24 | 15 | 07 | -12 | -10 | -23 | — | | | | |
| 77 | 11 | 14 | -13 | 06 | 11 | 02 | -07 | 05 | 10 | -19 | -13 | 15 | -07 | 18 | 32 | 01 | — | | | |
| 78 | 05 | 11 | 06 | -07 | 00 | 01 | 12 | 05 | 25 | 22 | 20 | 12 | -13 | -03 | 24 | 83 | 17 | — | | |
| 79 | -14 | 16 | 00 | 01 | 10 | -02 | 14 | -07 | 11 | 12 | 14 | 06 | -02 | -18 | -12 | 42 | -01 | 29 | — | |
| 80 | -22 | 11 | 17 | -14 | 09 | 09 | 07 | -08 | 05 | 14 | -02 | -13 | 08 | -29 | -47 | 31 | -31 | -01 | 29 | |

# Table IV

## Unrotated Factor Matrix for Full-Time Faculty

| Variables | Factors | | | | | | | | | | | | | | | | | | | | | | | | | $h^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | |
| 1 | -79 | -03 | 03 | -28 | 07 | 14 | -03 | -13 | -01 | -15 | -02 | -01 | 01 | -09 | 06 | -09 | 11 | 01 | -04 | 05 | 03 | -07 | -06 | -03 | 09 | 83 |
| 2 | -58 | 17 | -01 | -22 | -19 | 13 | 11 | 06 | -02 | -14 | 12 | 07 | -12 | 17 | -01 | -09 | -01 | -02 | 02 | 02 | 06 | -05 | 16 | -16 | 02 | 76 |
| 3 | -67 | 16 | 09 | -24 | -17 | 10 | 22 | -05 | 10 | -03 | 00 | -02 | -21 | 26 | 05 | 05 | 06 | -08 | -04 | -02 | 00 | 03 | 19 | -06 | 14 | 83 |
| 4 | -61 | 11 | -11 | -43 | -18 | 05 | 06 | 05 | 14 | -09 | -08 | 13 | -17 | 14 | -19 | 19 | 03 | 13 | -03 | 07 | 01 | 10 | -02 | -08 | -06 | 84 |
| 5 | -52 | 12 | 00 | -36 | -29 | -08 | 12 | 18 | 09 | 12 | 01 | 17 | -19 | 15 | -32 | -04 | 06 | -01 | 00 | 05 | -07 | 11 | -26 | 05 | 11 | 88 |
| 6 | -76 | -31 | 11 | -13 | 17 | -16 | -11 | -01 | 03 | -05 | 05 | -05 | -07 | -14 | -03 | -10 | 10 | -19 | 09 | 04 | -03 | -06 | -04 | 03 | 06 | 88 |
| 7 | -63 | -65 | 03 | 02 | 14 | -18 | -15 | -01 | -02 | 02 | 11 | 00 | -06 | -08 | -02 | -04 | 19 | -24 | 08 | 02 | -07 | -07 | 04 | 00 | 08 | 86 |
| 8 | -08 | -01 | -07 | -06 | 29 | 30 | 01 | 28 | -02 | -07 | -18 | -15 | -20 | 10 | 24 | 06 | -48 | -10 | 17 | -23 | -04 | 02 | 15 | 18 | 15 | 84 |
| 9 | 15 | 04 | 53 | 41 | 27 | 08 | -04 | 07 | -31 | -03 | -06 | 04 | 03 | 13 | -17 | 25 | 10 | 01 | 04 | -06 | -33 | -13 | 11 | 00 | 02 | 93 |
| 10 | -48 | 38 | 38 | 03 | 40 | 02 | -02 | 08 | -28 | -19 | -01 | -04 | -09 | 00 | -13 | 01 | 02 | -04 | 07 | -03 | -11 | -06 | 03 | 07 | -05 | 87 |
| 11 | 14 | 27 | 57 | 16 | 37 | -03 | 05 | 13 | -24 | -08 | -03 | 11 | -02 | 12 | -30 | 17 | 20 | 02 | 02 | 02 | -05 | -17 | -01 | 03 | -08 | 89 |
| 12 | -04 | 36 | 03 | 03 | -19 | 00 | -51 | -08 | 06 | -08 | 10 | 08 | -18 | 04 | 23 | 16 | 00 | 06 | -20 | -22 | -04 | -05 | 10 | 17 | 16 | 76 |
| 13 | 13 | 44 | 02 | -01 | -17 | 15 | -43 | 15 | 22 | -16 | 17 | 28 | 04 | 20 | 00 | -12 | -07 | 13 | 05 | -18 | -05 | -08 | 03 | 08 | -09 | 81 |
| 14 | -26 | 27 | 10 | -37 | 12 | 12 | -21 | 22 | -32 | 30 | 27 | 00 | 33 | 03 | 17 | -14 | -05 | 15 | 08 | -02 | 08 | -06 | -09 | -16 | 08 | 90 |
| 15 | -28 | 25 | 05 | -35 | -01 | 09 | -18 | 21 | -37 | 20 | 32 | 08 | 36 | 15 | 13 | -12 | -06 | 19 | 12 | 05 | 02 | 01 | -07 | -16 | 09 | 92 |
| 16 | -62 | -13 | 06 | -38 | 04 | 12 | -03 | 17 | -12 | -09 | -02 | -08 | 06 | -04 | -05 | 12 | 02 | 03 | -10 | 06 | -23 | -11 | 03 | -07 | -04 | 74 |
| 17 | -64 | -25 | 29 | 12 | -08 | -01 | 07 | -09 | 07 | 22 | 19 | 07 | 00 | 18 | -13 | -14 | -05 | 07 | -02 | -13 | 07 | -01 | -03 | 15 | 03 | 81 |
| 18 | -48 | 11 | 31 | -05 | -01 | -20 | 08 | -06 | 26 | -02 | 28 | 11 | 07 | 01 | 18 | -11 | 05 | -10 | -03 | 13 | -07 | -15 | 13 | 13 | -02 | 69 |
| 19 | -29 | 03 | 30 | -35 | -18 | 23 | 14 | -24 | -08 | -10 | -08 | 16 | 02 | -15 | 05 | 20 | 01 | 12 | -02 | -30 | -12 | 19 | -05 | 04 | -07 | 72 |
| 20 | -57 | 06 | 03 | -04 | 32 | -09 | -01 | -15 | -20 | 42 | -14 | -08 | 02 | 01 | 05 | 10 | -01 | -12 | -08 | 09 | 07 | 08 | 13 | -03 | -21 | 82 |
| 21 | -36 | -35 | 22 | -10 | 06 | 11 | -04 | -14 | 16 | -15 | 00 | -03 | 04 | -32 | -22 | -03 | -02 | 11 | -02 | -03 | 01 | 11 | 20 | 20 | 09 | 67 |
| 22 | -60 | 41 | 12 | -15 | 00 | -14 | -09 | -21 | -07 | -07 | -06 | 02 | -05 | 02 | 11 | -04 | -02 | -02 | -04 | -11 | 00 | -01 | -02 | 09 | -04 | 70 |
| 23 | -37 | -31 | 07 | 29 | -13 | -14 | -34 | -19 | -13 | -13 | 01 | -07 | 18 | -10 | -03 | 02 | 15 | 44 | 09 | 06 | 03 | 10 | 11 | 16 | 06 | 88 |
| 24 | -06 | 00 | -25 | 29 | 01 | -04 | -26 | -07 | -01 | -01 | 08 | 02 | 00 | 09 | -17 | 01 | 08 | 29 | 14 | 03 | 04 | 24 | 11 | 07 | 16 | 81 |
| 25 | -12 | 39 | -40 | 25 | 22 | 16 | 25 | 14 | 08 | 02 | 07 | -12 | -21 | 18 | -08 | -16 | -05 | -13 | -03 | -18 | -08 | -02 | -12 | -06 | 12 | 77 |
| 26 | -62 | -16 | 08 | 38 | -12 | 06 | -02 | 11 | 06 | -12 | -18 | -03 | 06 | 08 | 04 | -12 | -07 | 12 | -09 | 26 | 12 | -06 | -05 | 07 | -03 | 80 |
| 27 | -42 | 00 | 00 | 56 | 00 | 24 | 04 | 11 | -04 | -18 | -16 | 08 | -11 | 19 | -02 | -20 | -11 | 19 | 03 | 04 | -07 | 02 | -20 | -05 | 07 | 82 |
| 28 | -75 | -09 | -07 | 13 | -09 | 02 | 06 | 19 | 03 | -21 | -16 | 09 | 04 | -02 | 10 | -08 | -20 | 08 | -17 | 13 | 08 | -13 | 00 | 02 | -16 | 88 |
| 29 | -38 | -30 | 26 | 13 | 22 | -20 | -35 | 02 | 06 | 01 | -09 | 16 | 17 | -03 | 01 | -20 | 11 | -27 | 07 | -07 | 08 | -13 | 05 | 08 | 09 | 77 |
| 30 | -51 | -32 | 16 | 25 | -15 | 07 | -01 | 18 | 04 | 00 | -17 | 06 | 10 | 17 | -14 | -06 | -07 | -15 | 21 | -11 | -11 | -01 | 18 | -12 | -12 | 78 |
| 31 | 03 | 01 | 10 | 23 | -32 | -04 | 10 | -11 | 09 | 20 | 04 | 14 | 02 | -32 | -24 | -16 | -20 | 20 | -01 | 11 | -27 | -32 | -21 | 01 | -05 | 76 |
| 32 | -78 | -10 | 09 | 04 | 11 | -04 | -10 | 07 | -07 | -06 | -12 | 14 | -04 | -08 | 03 | -03 | -05 | -14 | 03 | -05 | -07 | 18 | -10 | -10 | -18 | 82 |
| 33 | -36 | 43 | -39 | 15 | -06 | -21 | -04 | -16 | -12 | -01 | 02 | 21 | 07 | 02 | -10 | -01 | -18 | -13 | -07 | -12 | -06 | -15 | 04 | -03 | 24 | 80 |
| 34 | -56 | -09 | -14 | 09 | -02 | 00 | 02 | -06 | -05 | -12 | -06 | 12 | 07 | -01 | 02 | 36 | -10 | -11 | -06 | -01 | 23 | -12 | 02 | -11 | 36 | 76 |
| 35 | -02 | 62 | 27 | 26 | -18 | -17 | 15 | 04 | -07 | 00 | 08 | -06 | 02 | -05 | 30 | 01 | -17 | -04 | 21 | 04 | 10 | 11 | 09 | -01 | -04 | 83 |
| 36 | -17 | 65 | 22 | 25 | -22 | -24 | -10 | -01 | -06 | 09 | 04 | -09 | -05 | -18 | 18 | 18 | -01 | -01 | 09 | -01 | -03 | 06 | 03 | 04 | 04 | 79 |
| 37 | -07 | 56 | 13 | 34 | -31 | -29 | -13 | -03 | -13 | -09 | 08 | -06 | -07 | -09 | -01 | -03 | -01 | -17 | -01 | 01 | -12 | 04 | -02 | -14 | 14 | 78 |
| 38 | -47 | 41 | -09 | 22 | -05 | -22 | -01 | -11 | -27 | 03 | -21 | 10 | 03 | 01 | -04 | -06 | 04 | -03 | -28 | -05 | 05 | 00 | -11 | -06 | -08 | 76 |
| 39 | -17 | -02 | -52 | 22 | 38 | 10 | 19 | 02 | -19 | 07 | 34 | -05 | -01 | 09 | -01 | 17 | 04 | 14 | -06 | 11 | -04 | -19 | 00 | -02 | -02 | 82 |
| 40 | -11 | 13 | -49 | 28 | 31 | 15 | 18 | -09 | -15 | 05 | 41 | -10 | -10 | 07 | 00 | -06 | 06 | 12 | -09 | -02 | 06 | -03 | 02 | -05 | -15 | 78 |
| 41 | -33 | -07 | -03 | 19 | 25 | -05 | -04 | -59 | 16 | 00 | -01 | 09 | -14 | 13 | 24 | 10 | 05 | 08 | 01 | 02 | 05 | -07 | -03 | -18 | -08 | 77 |
| 42 | -26 | -17 | -01 | 10 | 18 | 00 | 07 | -52 | 15 | 08 | 25 | 30 | -04 | 06 | 09 | -01 | -02 | 10 | 32 | -05 | -04 | 01 | -02 | -02 | 25 | 79 |
| 43 | -64 | 03 | 10 | 05 | 04 | 15 | -15 | -04 | -03 | 24 | -13 | -01 | 06 | -07 | 14 | 25 | -16 | 02 | -15 | 18 | 14 | 12 | -06 | 06 | -12 | 80 |
| 44 | -15 | -40 | 23 | -01 | -27 | -09 | 10 | 17 | -14 | 32 | 07 | 17 | -34 | 16 | 13 | 17 | -16 | 07 | 00 | -05 | 05 | -07 | 11 | -06 | -02 | 75 |
| 45 | -18 | -27 | 09 | 06 | -39 | -29 | 06 | 13 | -11 | 37 | 12 | -02 | -25 | 05 | -07 | 00 | 06 | -10 | 33 | 06 | 12 | -07 | 13 | -11 | -21 | 82 |
| 46 | -37 | 12 | -04 | 12 | 01 | 29 | -12 | 02 | 08 | -03 | -16 | 11 | 37 | 01 | 12 | 07 | 17 | -29 | 16 | -02 | 17 | 10 | -20 | 20 | -05 | 72 |
| 47 | -22 | -20 | -27 | -05 | 27 | -15 | 10 | -37 | -16 | 00 | -20 | -06 | -15 | -01 | -11 | -26 | -15 | -02 | 11 | -12 | -12 | 28 | 07 | 02 | -10 | 75 |
| 48 | -71 | -17 | -03 | -07 | -11 | -09 | 06 | -04 | 15 | 33 | -01 | -31 | 24 | -01 | 01 | 01 | -10 | -02 | 05 | -13 | -16 | -04 | -09 | -03 | 07 | 86 |
| 49 | -68 | -19 | -04 | 00 | -06 | -06 | 03 | -04 | 22 | 25 | -02 | -30 | 21 | 09 | 05 | 04 | -07 | 04 | 04 | -17 | -14 | -03 | -10 | 02 | 04 | 84 |
| 50 | -33 | 06 | -18 | 26 | -10 | 38 | 23 | 06 | 21 | -07 | 16 | 14 | 12 | -21 | 22 | 09 | 21 | -15 | -03 | 18 | -18 | -01 | 19 | -01 | 03 | 81 |
| 51 | -18 | 06 | 09 | 35 | -11 | 48 | 30 | 08 | 04 | 12 | 08 | -01 | 25 | -02 | 08 | 07 | 24 | -04 | -03 | -15 | -01 | 27 | 04 | -20 | -13 | 82 |
| 52 | -72 | 04 | -06 | 20 | 19 | 03 | 21 | 14 | -06 | 12 | -05 | -10 | 01 | -22 | -14 | 01 | 07 | 04 | -14 | -29 | 16 | -04 | 08 | 07 | 04 | 91 |
| 53 | -74 | 01 | -05 | 20 | -14 | 04 | 23 | 15 | -04 | 14 | -02 | -09 | -04 | -20 | -11 | 00 | 06 | 07 | -15 | -24 | 21 | -01 | 14 | 06 | -03 | 92 |
| 54 | -14 | 26 | -54 | 04 | -07 | -02 | 17 | -10 | -03 | 07 | -34 | 11 | 17 | -05 | -13 | 07 | -07 | 10 | 16 | 10 | 10 | -12 | 14 | 35 | 04 | 83 |
| 55 | -14 | 10 | -36 | -13 | -14 | 00 | 17 | -26 | -14 | 06 | -12 | 20 | 08 | 10 | -12 | 21 | -03 | 07 | 33 | 12 | -14 | 05 | -09 | 05 | -30 | 69 |
| 56 | -11 | -33 | 28 | 14 | 29 | 20 | 09 | 12 | 13 | 07 | 17 | -05 | -13 | -06 | -09 | -07 | -29 | 08 | -14 | 20 | -08 | 19 | 14 | 17 | 01 | 69 |
| 57 | -37 | 08 | -30 | 26 | -20 | 07 | -34 | -01 | -03 | -01 | 42 | -13 | -10 | -13 | -08 | 11 | -15 | -14 | -05 | 11 | 03 | 16 | 08 | 06 | -06 | 80 |
| 58 | -07 | -24 | -28 | 24 | -10 | 16 | -30 | -01 | -16 | -10 | 18 | -01 | 09 | -05 | -11 | -16 | -25 | -36 | 14 | 12 | 02 | 18 | -05 | -06 | -21 | 73 |
| 59 | -01 | 06 | -08 | -02 | 16 | 05 | 10 | -02 | 12 | 42 | 17 | 37 | -22 | -34 | 13 | 00 | 11 | -16 | -14 | -03 | -09 | 07 | -19 | 14 | 01 | 71 |
| 60 | -23 | 14 | -18 | -14 | 14 | -18 | 16 | 31 | -06 | 09 | -03 | 24 | 15 | -35 | 00 | -01 | -08 | 12 | 08 | -10 | -30 | 08 | 12 | 11 | -01 | 67 |
| 61 | -21 | -48 | -02 | 15 | 09 | -37 | -05 | 14 | -02 | -25 | -05 | 09 | -24 | -05 | 18 | 07 | -15 | 21 | 06 | -01 | 06 | 03 | -14 | -15 | -11 | 76 |
| 62 | -13 | 01 | -10 | 21 | -01 | -40 | 11 | 23 | 04 | 06 | -13 | -39 | -06 | 08 | 13 | -02 | 36 | 11 | 07 | -05 | -09 | 15 | -24 | -06 | 07 | 74 |
| 63 | 08 | 32 | -12 | -10 | 19 | -23 | -18 | 19 | 07 | 36 | -13 | 21 | -03 | 05 | -06 | 05 | 02 | 05 | -08 | 30 | 08 | 26 | 34 | 02 | 10 | 80 |
| 64 | -03 | -10 | -11 | 16 | 07 | -16 | -03 | -05 | 07 | 12 | -12 | 39 | 10 | 40 | 11 | 31 | 26 | 00 | 32 | -04 | -02 | 08 | 09 | 02 | -08 | 74 |
| 65 | -14 | -14 | 04 | -04 | 18 | -42 | 12 | 15 | 29 | -06 | 13 | -24 | 21 | 15 | 20 | 31 | -01 | 14 | -07 | -05 | -06 | 17 | -06 | 24 | -12 | 80 |
| 66 | -03 | -03 | -31 | -02 | 24 | -25 | 19 | 13 | 31 | -08 | -11 | 18 | 36 | 17 | -12 | 12 | -11 | -02 | 19 | -13 | 12 | -12 | 04 | -25 | -09 | 77 |
| 67 | -12 | 09 | -03 | 00 | 11 | -16 | -01 | 20 | 13 | -27 | 43 | 18 | -05 | 02 | -36 | 38 | 12 | -10 | 10 | -12 | 19 | 07 | -08 | 12 | 00 | 80 |
| 68 | 00 | -21 | -27 | 08 | 25 | -49 | 00 | 37 | 14 | -07 | 08 | 28 | 01 | -24 | 15 | 00 | -15 | 03 | -06 | -11 | -05 | -02 | -06 | -11 | -07 | 82 |
| 69 | -79 | -21 | 29 | 02 | 08 | 00 | 03 | -02 | -05 | 02 | 13 | 00 | -10 | 14 | 09 | 31 | -01 | 05 | 02 | 04 | -07 | -07 | -06 | 06 | 01 | 84 |
| 70 | -15 | 37 | 00 | 15 | 23 | 23 | -19 | 15 | 28 | 28 | -27 | 01 | -21 | -06 | 09 | 00 | 10 | 02 | 22 | 01 | 06 | -08 | -10 | -07 | 11 | 73 |
| 71 | -13 | 24 | -03 | 08 | 14 | 32 | -32 | 17 | 34 | 17 | -18 | -01 | -31 | -14 | 13 | 19 | 19 | 15 | 22 | 09 | 06 | -13 | -09 | -06 | -06 | 83 |
| 72 | -30 | -14 | -08 | 03 | -15 | -04 | 06 | 04 | -25 | -18 | -17 | 19 | 02 | 05 | 26 | 28 | -02 | -09 | -14 | 26 | -28 | 21 | -10 | -12 | 23 | 76 |
| 73 | 24 | -09 | 14 | 04 | 01 | -04 | 44 | -05 | -22 | -26 | 06 | 15 | -04 | -26 | 35 | -15 | 09 | 10 | 18 | -09 | 15 | 00 | 14 | -07 | -02 | 74 |
| 74 | -02 | -35 | 02 | -02 | -15 | 12 | 19 | 23 | -45 | -06 | -03 | 18 | -15 | 04 | 14 | -11 | 15 | -02 | 17 | -04 | 21 | -01 | -17 | 32 | 10 | 78 |
| 75 | 11 | -21 | -60 | 00 | -21 | -04 | -23 | 14 | -17 | 02 | -13 | -06 | -07 | -12 | 00 | 03 | 27 | 01 | 05 | -05 | -12 | -15 | 22 | -10 | 03 | 77 |
| 76 | -66 | 41 | -03 | -32 | 25 | -03 | 03 | 01 | 02 | -21 | 03 | -12 | -07 | -11 | -03 | -15 | 02 | 02 | 00 | 09 | 14 | 02 | -06 | 00 | -03 | 92 |
| 77 | -17 | -25 | -40 | -19 | -10 | -13 | 00 | -15 | -17 | -05 | 05 | -22 | -10 | 22 | 25 | 07 | 07 | -17 | -03 | 01 | -18 | -21 | 05 | 21 | -05 | 71 |
| 78 | -64 | 24 | -29 | -31 | 16 | -01 | -14 | 07 | -10 | -18 | -03 | -10 | -16 | -19 | -01 | -14 | 14 | 07 | 06 | 02 | 03 | -02 | 02 | -04 | -04 | 87 |
| 79 | -31 | 47 | -01 | -03 | -20 | -09 | 11 | 13 | 24 | -26 | 15 | -09 | 00 | 07 | 05 | -19 | 12 | 00 | 16 | 17 | -24 | -08 | 16 | 12 | -11 | 78 |
| 80 | -01 | 60 | 37 | 07 | 08 | -32 | 31 | -08 | 10 | -03 | -04 | -11 | 03 | -05 | -07 | 03 | -08 | -09 | 01 | 19 | 19 | -08 | -08 | -07 | 03 | 85 |

# Table V

## Rotated Factor Matrix and Communalities
## For College of Medicine Full-Time Faculty

| Variables | Factors | | | | | | | | | | | | | | | | | | | | | | | | | h² |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | |
| 1 | -85 | -16 | -13 | 06 | 00 | -07 | 01 | -03 | -02 | 01 | 10 | -11 | 05 | -04 | 04 | -05 | 09 | -07 | 05 | -01 | 04 | 02 | 02 | -03 | -05 | 83 |
| 2 | -70 | -07 | 14 | -02 | 12 | 09 | 03 | 06 | 19 | -10 | 11 | 08 | 24 | -12 | -16 | -17 | -06 | 07 | -03 | 06 | 09 | 01 | 02 | -05 | 05 | 76 |
| 3 | -69 | -11 | 20 | -06 | -01 | 11 | 16 | 19 | 08 | -01 | 00 | 12 | 19 | -10 | -09 | -11 | 07 | 12 | -05 | 00 | 27 | 03 | 02 | -18 | 05 | 83 |
| 4 | -68 | 06 | 11 | 00 | 03 | 03 | 03 | 15 | 07 | -10 | 04 | -09 | 01 | 00 | -33 | -19 | -05 | -05 | 01 | -06 | 08 | 29 | 09 | -19 | 13 | 84 |
| 5 | -56 | 13 | 19 | 00 | -09 | 11 | -22 | 09 | -09 | 04 | 13 | 01 | 01 | 09 | -44 | -16 | -24 | 01 | -15 | -15 | 15 | 16 | 07 | -15 | -04 | 88 |
| 6 | -75 | -20 | 08 | 05 | -17 | -15 | 03 | -22 | -11 | 21 | -01 | -15 | 10 | 12 | -03 | 06 | -01 | 04 | 03 | -10 | -13 | -18 | 01 | 02 | -05 | 88 |
| 7 | -39 | -24 | 26 | 12 | -18 | -22 | 06 | -31 | -14 | 26 | -10 | -39 | 10 | 09 | 00 | 10 | 02 | 06 | -04 | -07 | -15 | -27 | -08 | -04 | -07 | 86 |
| 8 | -07 | 07 | -01 | -44 | -08 | 25 | 32 | -05 | 15 | -15 | 01 | -11 | 00 | 07 | 23 | 03 | -18 | 34 | 27 | 06 | -12 | -01 | 25 | -05 | -21 | 84 |
| 9 | 21 | -02 | 07 | -09 | -01 | -08 | -05 | 02 | 06 | -04 | -04 | 07 | -01 | -11 | 06 | 90 | 00 | 04 | 02 | -01 | 07 | -11 | 02 | -12 | 01 | 93 |
| 10 | -53 | 00 | -17 | -12 | 05 | 00 | 10 | 00 | 01 | -03 | 12 | 28 | 03 | 07 | -02 | 62 | -10 | -01 | 09 | -08 | 00 | -01 | 08 | 05 | -06 | 87 |
| 11 | 07 | 06 | -05 | -04 | 12 | 07 | 01 | 18 | 03 | 05 | 03 | 17 | -05 | 03 | -20 | 84 | 07 | 11 | -05 | -03 | 06 | -06 | 05 | 11 | -01 | 89 |
| 12 | -05 | 02 | 00 | 15 | 02 | -08 | 06 | -05 | -07 | -80 | -03 | 19 | -06 | 05 | -03 | 03 | 03 | 01 | -01 | -03 | 05 | -08 | 09 | 05 | 13 | 76 |
| 13 | 14 | 01 | -16 | -03 | 13 | 05 | -05 | -03 | 14 | -68 | 25 | 14 | 25 | 02 | -14 | -05 | 00 | -01 | -17 | -09 | 01 | -01 | 21 | 10 | -01 | 81 |
| 14 | -23 | 04 | -02 | 03 | -01 | 02 | 05 | 02 | -07 | -04 | 90 | 07 | -05 | 00 | 06 | 03 | 05 | 01 | 04 | 04 | 02 | -06 | 06 | 07 | 00 | 90 |
| 15 | -22 | 04 | 02 | 02 | 02 | -03 | 03 | -02 | 03 | -06 | 92 | 07 | 03 | -01 | -03 | 00 | 00 | -02 | -02 | 05 | 03 | 04 | -05 | -06 | -03 | 92 |
| 16 | -69 | 15 | 03 | 02 | -10 | 00 | 00 | 02 | 02 | 00 | 21 | -28 | 09 | 00 | 02 | 13 | 06 | 00 | 17 | -03 | -03 | 01 | -04 | -22 | 09 | 74 |
| 17 | -51 | -29 | 31 | -26 | -23 | -17 | -21 | -05 | -01 | 00 | 07 | -05 | -03 | -13 | -10 | 06 | 00 | 12 | -19 | -03 | 13 | -11 | -11 | 16 | -10 | 81 |
| 18 | -45 | -25 | 06 | -12 | -13 | 03 | -06 | 05 | -13 | -02 | 06 | 24 | 43 | 01 | -06 | 03 | 19 | -01 | -13 | -09 | -04 | -14 | -11 | 09 | 06 | 69 |
| 19 | -38 | -15 | -04 | -02 | -04 | 04 | 04 | 25 | -15 | -27 | 05 | -06 | -12 | -26 | 00 | 07 | -03 | -07 | 29 | -33 | 12 | 18 | -17 | -11 | -09 | 72 |
| 20 | -52 | -10 | 16 | -06 | -14 | -03 | 24 | -10 | -25 | 18 | 13 | 10 | -24 | -01 | 26 | 18 | 10 | 04 | -12 | 13 | 03 | 19 | 07 | 07 | 22 | 82 |
| 21 | -40 | -16 | -01 | -14 | 15 | -29 | -06 | 01 | 03 | -4 | -09 | -27 | -03 | -17 | -02 | -01 | -05 | 00 | 24 | -23 | -08 | -20 | -09 | 05 | 23 | 67 |
| 22 | -63 | -15 | -10 | 06 | -05 | -03 | 07 | 06 | -07 | -24 | 09 | 37 | 00 | 10 | 07 | 05 | -04 | 06 | -03 | -05 | 07 | 11 | -01 | 03 | 03 | 70 |
| 23 | -19 | -16 | 03 | 02 | -13 | -85 | -08 | -09 | 14 | -04 | -01 | -05 | -02 | -01 | 05 | 05 | 11 | -01 | 00 | -07 | -02 | -02 | -08 | -04 | -07 | 88 |
| 24 | -36 | -16 | 03 | -05 | -08 | -63 | 03 | -18 | 11 | -05 | 05 | 05 | -01 | -04 | -17 | -05 | -17 | 15 | -14 | 22 | 00 | 12 | 16 | -07 | 05 | 81 |
| 25 | -07 | 05 | -17 | -05 | -06 | 29 | -01 | -04 | 05 | -01 | -08 | 17 | 01 | -12 | -07 | -05 | -40 | 20 | -11 | 55 | 02 | -01 | 24 | 03 | -04 | 77 |
| 26 | -50 | 01 | 05 | -21 | -09 | -29 | -20 | -17 | 31 | 12 | -13 | 08 | 03 | -13 | 09 | -02 | 26 | 06 | -24 | 04 | -02 | -06 | 13 | -12 | -15 | 80 |
| 27 | -28 | -09 | -05 | -23 | 02 | -17 | -29 | -16 | 37 | -02 | -11 | 10 | -06 | -22 | 07 | 13 | -13 | 05 | -23 | 22 | -03 | -05 | 25 | -21 | -27 | 82 |
| 28 | -71 | 09 | 02 | -17 | -01 | -09 | -15 | -12 | 23 | -03 | -08 | 04 | 03 | -09 | 10 | -10 | 24 | 10 | -15 | 09 | -25 | 06 | 02 | -13 | -11 | 88 |
| 29 | -31 | -23 | 01 | 06 | -09 | -18 | 05 | -30 | -05 | 09 | 02 | -11 | 05 | 10 | 06 | 24 | 11 | 21 | -28 | -31 | -19 | -29 | 05 | 18 | -07 | 77 |
| 30 | -39 | -04 | 34 | -06 | -10 | -07 | -07 | -30 | 32 | 04 | -08 | -14 | 10 | -30 | 07 | 20 | -08 | 18 | -13 | -19 | -11 | 02 | 03 | 01 | -01 | 77 |
| 31 | 07 | -01 | 11 | -03 | 05 | -06 | -82 | 00 | -10 | 03 | -06 | 10 | 06 | 00 | 08 | 00 | 04 | 02 | 07 | -05 | -03 | 08 | 00 | 06 | 06 | 76 |
| 32 | -73 | -10 | -06 | -06 | -07 | -07 | 03 | -30 | -04 | 00 | 01 | 03 | -11 | -13 | 04 | 12 | -08 | -05 | -09 | -10 | -25 | 04 | -08 | -12 | -05 | 82 |
| 33 | -25 | -12 | -13 | 21 | 07 | 00 | -14 | -12 | -04 | -15 | 06 | 34 | -01 | 12 | -06 | -06 | -15 | 52 | -15 | 26 | -09 | 19 | -06 | -13 | 12 | 80 |
| 34 | -43 | -21 | 04 | 08 | 01 | -11 | 09 | -07 | 11 | 08 | -03 | 02 | -15 | -07 | -18 | -06 | 24 | 49 | 08 | 08 | -07 | -04 | 00 | -32 | -01 | 76 |
| 35 | 06 | -02 | 06 | -10 | 02 | 06 | 06 | 03 | 05 | -07 | 11 | 84 | 13 | -14 | 08 | 04 | 02 | -01 | 08 | -03 | -02 | 06 | 04 | 04 | -07 | 83 |
| 36 | -07 | 04 | 05 | 08 | -10 | -12 | 00 | 03 | -11 | -21 | 06 | 79 | 06 | -04 | 00 | 11 | 02 | 05 | 09 | -04 | 06 | 03 | 16 | -06 | 07 | 79 |
| 37 | 00 | 07 | 00 | 22 | 05 | -07 | -16 | -15 | 01 | -15 | -02 | 74 | 07 | 02 | -05 | 10 | -17 | 08 | -01 | -01 | 07 | -14 | 01 | -15 | 10 | 78 |
| 38 | -44 | 06 | -10 | 21 | 03 | -08 | -11 | -04 | -05 | -09 | -02 | 44 | -27 | -03 | 09 | 10 | -02 | 12 | -32 | 17 | -01 | 14 | -05 | -10 | 03 | 76 |
| 39 | -04 | -09 | -03 | 01 | -07 | -05 | 03 | -05 | -05 | 11 | 09 | -16 | 03 | -03 | -06 | 08 | 09 | 10 | 02 | 83 | -11 | 13 | 01 | -08 | 02 | 82 |
| 40 | -02 | -11 | -07 | 00 | 04 | -03 | 03 | -09 | -05 | -01 | 03 | -01 | 00 | -11 | 00 | -04 | -05 | -04 | -03 | 84 | -02 | 06 | -02 | 13 | 00 | 78 |
| 41 | -25 | -70 | -01 | 06 | -05 | -08 | 07 | 02 | 02 | -08 | -21 | 03 | -13 | -01 | 15 | 01 | 13 | -09 | -09 | 18 | 00 | 04 | 09 | -04 | 14 | 77 |
| 42 | -09 | -82 | 04 | -09 | 01 | -16 | -07 | 01 | -11 | 06 | 04 | -07 | 08 | -01 | -08 | -04 | -11 | 11 | 02 | 07 | 00 | 08 | 02 | -02 | -03 | 79 |
| 43 | -55 | -06 | 09 | -14 | -11 | 06 | -07 | -12 | -07 | -04 | 11 | 08 | -18 | -04 | 16 | 06 | 49 | 15 | 02 | 05 | 07 | 09 | 22 | -08 | 07 | 80 |
| 44 | -09 | -05 | 77 | -17 | -02 | 03 | -04 | 09 | -03 | -07 | 01 | -10 | -12 | 01 | 02 | 00 | 10 | 03 | -02 | -07 | -05 | -08 | -06 | -16 | -14 | 75 |
| 45 | -10 | 01 | 81 | 15 | -04 | -07 | -06 | -16 | 00 | 17 | 00 | 09 | 06 | 02 | -04 | -06 | 00 | -08 | 00 | -07 | -02 | 06 | -01 | 15 | -06 | 82 |
| 46 | -25 | -08 | -31 | 08 | -15 | 00 | 13 | -33 | -03 | 01 | 09 | 04 | 02 | -34 | -08 | 01 | 21 | 16 | -14 | -17 | 09 | 18 | 23 | 02 | -23 | 72 |
| 47 | -25 | -18 | -14 | -04 | 03 | -03 | 13 | -07 | -12 | 08 | -09 | 13 | -17 | 15 | 26 | -03 | -50 | 01 | -06 | 16 | -01 | 36 | -06 | 13 | 11 | 75 |
| 48 | -58 | -11 | 12 | 02 | -54 | -08 | -18 | -10 | 04 | 13 | 13 | -05 | 01 | -13 | 10 | -15 | -05 | 22 | 09 | -04 | 01 | 01 | -02 | 02 | 15 | 86 |
| 49 | -52 | -15 | 12 | -02 | -60 | -10 | -13 | -07 | 07 | 06 | 09 | -08 | -01 | -15 | 11 | -14 | -02 | 19 | 03 | 00 | 02 | 00 | 06 | 02 | 12 | 84 |
| 50 | -21 | -06 | 09 | -02 | 08 | -03 | -05 | -10 | -17 | 04 | -11 | 01 | 47 | -55 | 02 | -10 | 17 | 11 | 01 | 21 | -01 | 00 | 13 | -23 | 01 | 81 |
| 51 | -06 | 00 | 00 | -04 | -04 | 00 | 01 | -05 | 01 | 04 | 04 | 06 | 00 | -87 | 02 | 06 | -01 | -06 | -05 | 11 | 14 | -02 | 05 | -03 | -02 | 82 |
| 52 | -64 | 16 | 16 | 05 | -13 | -22 | -14 | 04 | -07 | 01 | -09 | 14 | -12 | -37 | -03 | -05 | -02 | 35 | 01 | 15 | -03 | -03 | -01 | 12 | -11 | 91 |
| 53 | -66 | 15 | 21 | -03 | -10 | -23 | -08 | 04 | -07 | 03 | -10 | 13 | -12 | -37 | -02 | -06 | 01 | 28 | -01 | 20 | -06 | -03 | 00 | 16 | -09 | 92 |
| 54 | -06 | 12 | -17 | 07 | 03 | -14 | -02 | 07 | 00 | 10 | -10 | 08 | 07 | 06 | 05 | -19 | 06 | 45 | -07 | 17 | 00 | 65 | 10 | 07 | -06 | 83 |
| 55 | -08 | -13 | 06 | 16 | 00 | 03 | -07 | -09 | 00 | 03 | 02 | -02 | 01 | -02 | -05 | -06 | -05 | -06 | 05 | 08 | 03 | 77 | -03 | -10 | 01 | 69 |
| 56 | -08 | 00 | 08 | -70 | -01 | -10 | -03 | -08 | -09 | 15 | -10 | -20 | 05 | -04 | 04 | 13 | 01 | -07 | 04 | 06 | -02 | -22 | -01 | 01 | 06 | 69 |
| 57 | -22 | 05 | 05 | -05 | -06 | -25 | -08 | -59 | -12 | -21 | 01 | 17 | 01 | -02 | -20 | -23 | 03 | 03 | 13 | 32 | 09 | -06 | 03 | -10 | 09 | 80 |
| 58 | 03 | 01 | 04 | -03 | 10 | -06 | 01 | -81 | 08 | 00 | -01 | -11 | -03 | -06 | 00 | -11 | -01 | 00 | 06 | 09 | -03 | 06 | -09 | -05 | -01 | 73 |
| 59 | 00 | -13 | 03 | -07 | 05 | 17 | -14 | 01 | -74 | 00 | 00 | -01 | -04 | -08 | -06 | -09 | -01 | -01 | -10 | 09 | -11 | -01 | 19 | -02 | -06 | 71 |
| 60 | -20 | 20 | -06 | -06 | -04 | -07 | -08 | 12 | -31 | 02 | 20 | 03 | 17 | -07 | 03 | 05 | -20 | 17 | 05 | 00 | -49 | 26 | 01 | -05 | 02 | 67 |
| 61 | -17 | -16 | 24 | 06 | -18 | -10 | 00 | -06 | 19 | 02 | -20 | -10 | -18 | 18 | 00 | -04 | -05 | -21 | 02 | 01 | -56 | -12 | -02 | -19 | -18 | 76 |
| 62 | -04 | 15 | 07 | 28 | -52 | -18 | 05 | 12 | 08 | 24 | -11 | 22 | -03 | -01 | 00 | -03 | -21 | -18 | -12 | 12 | -13 | -14 | 17 | -09 | -10 | 74 |
| 63 | 11 | 21 | 07 | -15 | 15 | -13 | 30 | 11 | -25 | 10 | 18 | 18 | 02 | 20 | -07 | -04 | -03 | 11 | -36 | -03 | -08 | 17 | 25 | -04 | 38 | 80 |
| 64 | 02 | -06 | 03 | 04 | -01 | -02 | 06 | 07 | -03 | -09 | -02 | -13 | 03 | -07 | 07 | 00 | -03 | 00 | -82 | 03 | -10 | -02 | -07 | -04 | -01 | 74 |
| 65 | -05 | -01 | -04 | -18 | -69 | -08 | 23 | 15 | 01 | 00 | -07 | 04 | 08 | 04 | -17 | 02 | 17 | -13 | 00 | 01 | -29 | 02 | -16 | -02 | 09 | 80 |
| 66 | 03 | -13 | -08 | 12 | -12 | 21 | 08 | 04 | 31 | 16 | 02 | -12 | 01 | -09 | -22 | -06 | 04 | 23 | -15 | 05 | -50 | 26 | 01 | 15 | 24 | 77 |
| 67 | -08 | -01 | -01 | 01 | -03 | -03 | 13 | -11 | -06 | -11 | -06 | 04 | 06 | 01 | -80 | 16 | 04 | 04 | 11 | 12 | -16 | 01 | -07 | 09 | 00 | 80 |
| 68 | 05 | 03 | 04 | 01 | -09 | 02 | -02 | -05 | -14 | 01 | -03 | -06 | 00 | 13 | -10 | -10 | 00 | 04 | -12 | 10 | -84 | -11 | -03 | -06 | 02 | 82 |
| 69 | -70 | -27 | 21 | -24 | -22 | -15 | -01 | -08 | 00 | 04 | 09 | -01 | 03 | -05 | -01 | 15 | 01 | -07 | -06 | 00 | 03 | -11 | -02 | -13 | -13 | 84 |
| 70 | -09 | -06 | -07 | -01 | -01 | 07 | -02 | 04 | -08 | -03 | 03 | 13 | 02 | -06 | 08 | 09 | -09 | 09 | -04 | 02 | 02 | 00 | 80 | 05 | 07 | 73 |
| 71 | -10 | -01 | 00 | 03 | 05 | -05 | 03 | 04 | -06 | -16 | -03 | 00 | 02 | -05 | -03 | 00 | 14 | -10 | 11 | 03 | 02 | 01 | 85 | 04 | 05 | 83 |
| 72 | -22 | -02 | 01 | 04 | -03 | -06 | 05 | -08 | -01 | 09 | -01 | 03 | -01 | -06 | 06 | 00 | 04 | 05 | -05 | -06 | -09 | -08 | -09 | -80 | -08 | 76 |
| 73 | 17 | -16 | 03 | 05 | 30 | 01 | 12 | 28 | -01 | 15 | -06 | 13 | 11 | -20 | 18 | -01 | 00 | -15 | 18 | 00 | -27 | -06 | -27 | 06 | -40 | 74 |
| 74 | -02 | 10 | 22 | 01 | 09 | -06 | 07 | 00 | -06 | 14 | 05 | -18 | 04 | 00 | -03 | 02 | 01 | 02 | -04 | -02 | 03 | 03 | -10 | -09 | -79 | 78 |
| 75 | 14 | 27 | 16 | 51 | 08 | -25 | 07 | -11 | -02 | -06 | -08 | -32 | 11 | 06 | 16 | -20 | -09 | 16 | 02 | 19 | -11 | 08 | 09 | -12 | 02 | 77 |
| 76 | -78 | 02 | -31 | -02 | 05 | 03 | 14 | 07 | -01 | 07 | 17 | 23 | 06 | 14 | -10 | -06 | -07 | -07 | 08 | 13 | -03 | 05 | 10 | 12 | 04 | 92 |
| 77 | -16 | -04 | 13 | 26 | -30 | 06 | 17 | -11 | -03 | -07 | -11 | -23 | 19 | 29 | 22 | -17 | 06 | 06 | 03 | 25 | 10 | 13 | -22 | -17 | -15 | 71 |
| 78 | -72 | 10 | -18 | 20 | 10 | -14 | 16 | -02 | -06 | -03 | 14 | 02 | 08 | 16 | 00 | -12 | -16 | -03 | 12 | 21 | -11 | 09 | 19 | 03 | -01 | 87 |
| 79 | -31 | 11 | -10 | 04 | -07 | 01 | -08 | 04 | 14 | -11 | -03 | 39 | 64 | -03 | -08 | -03 | -10 | -09 | -04 | 08 | 03 | 11 | 07 | 05 | 04 | 78 |
| 80 | -08 | -02 | -14 | -05 | 02 | 23 | -02 | 24 | 05 | 24 | -04 | 73 | -01 | 09 | -14 | 16 | 10 | -02 | 03 | -06 | 04 | 00 | 00 | 15 | 15 | 85 |

Note: Decimals have been ommitted

# Chapter III

## An Investigation of the Criterion Problem For a Group of Urban Medical Specialists

During the past three decades, the revolution in medical science due to the rapid expansion of knowledge and technology has had profound repercussions on the medical profession. One such adjustment had been the increasing trend toward specialization. Fully half of the private practitioners in the United States today are specialists, compared to only 16 per cent in 1931 (Peterson, 1963). Moreover, this body of medical specialists represents a highly selected group. Only the "most promising" are welcomed into the ladder-like training programs of the university hospitals that lead to certification in one or another specialty. According to Peterson (1963), medical school students of *higher academic rank* obtain teaching-hospital internships more frequently than poorer students and go on to further postgraduate training with substantially greater probability than those who have interned in non-teaching hospitals. Thus, once again we encounter the implicit assumption that medical school achievement and internship-residency training provide the highest quality of medical skill and care. That this assumption is questionable, if not in error, is highlighted by at least two studies that have failed to demonstrate such a relationship (Richards, Taylor, & Price, 1962). In the study by Peterson, *et al.*, (1956), it was found that the physician's record as a medical student had little prognostic value for on-the-job clinical excellence. Obviously, considerable research is warranted and needed in this area. The present phase of the project represents a first step in this direction, that of exploring the criterion problem for a group of practicing medical specialists.

### Subjects:

The population under consideration consisted of 332 physicians practicing in the urbanized Ogden-Salt Lake City-Provo complex of the state of Utah who had passed at least one of the American Board Specialty Certification examinations. All of these physicians held clinical faculty (i.e., part time) positions in the College of Medicine of the University of Utah. Letters signed by the Dean of the University of Utah College of Medicine were sent to these physicians requesting them to participate in this project by granting an interview lasting approximately one hour. A second letter was sent to physicians who did not respond to the first letter, and those who did not respond to this second letter were dropped. Ultimately there were 190 physicians who agreed to participate, and this smaller group, therefore, was the sample actually studied in detail in this phase of the project.

### Criterion Measures:

Eighty scores relevant to physician performance obtained from a variety of sources, including three scores measuring performance in education, were analyzed.

The first five of these scores were based on colleague opinions: these included 1 score based on nominations by other specialists as an outstanding contributor to medicine, 1 score based on nominations by other specialists as a preferred consultant, 1 score based on nominations by general practitioners, 1 score based on nominations by the University of Utah College of Medicine full-time faculty, and 1 score based on a rating of "clinical excellence" by the head of the College of Medicine department corresponding to the field of specialization of the individual doctor. The next six scores were obtained from medical directories and other compendiums: specifically, 2 scores concerning residency training, 1 score dealing with specialty certification, 1 score concerning current rank on the University of Utah College of Medicine clinical faculty, 1 score dealing with professional mobility, and 1 score based on listings in honorary compendiums such as Who's Who in American Medicine. The next 57 scores were obtained during an interview with each participating specialist: i.e., 1 score based on income, 2 scores having to do with society memberships, 1 score from a special questionnaire dealing with sources and degrees of occupational satisfaction, 49 scores based on answers to direct questions asked in the course of the interview, 3 scores dealing with the specialist's "image" of success, and 1 score representing the specialist's self-assessment of his own success. The final 12 scores were obtained from heterogeneous sources and included 1 score involving ratings by expert judges of "overall performance" (as judged from the information available in the form of the foregoing 68 scores), 3 ratings by the project researcher who conducted the interview, 5 "control" scores involving such variables as years of experience, and 3 scores measuring performance in undergraduate and medical education. The exact titles of the 80 variables and the sources from which they were obtained are listed in Table VI at the end of this chapter.[5] Details of the system by which the raw scores were derived for each variable are presented in Appendix B.

## Representativeness of the Sample Studied:

The criterion scores available for the 142 non-participating physicians were the 2 scores dealing with residency, the score concerning quality of board certification, the 2 scores concerning nominations by other specialists, the score based on various Who's Who listings, the score concerning current rank on the College of Medicine clinical faculty, and three control scores of years of experience, age at which the M.D. was obtained, and the number of years between receiving the M.D. degree and obtaining specialty certification. For these 10 scores, t tests were used to compare the physicians who did not participate with the physicians who did. Only one difference out of the 10 was significant at the 5% level, and this difference indicated that the non-participating physicians generally held lower rank on the College of Medicine clinical faculty. The meaning of this difference is not entirely clear. However, since the other 9 differences were not found to be significant, it seems safe to assume that the sample of 190 participating physicians is relatively representative of the population of specialists from which they were drawn.

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[5] All tables for this sample are presented at the end of this chapter.

Results:

As with the full-time College of Medicine faculty sample, a relatively large number of factors emerged. Specifically, the factor analysis of the 80 variable intercorrelation matrix (see Table VII at the end of the chapter) yielded 29 factors with an eigenvalue greater than 1.00 (see Table VIII). The unrotated factor matrix and rotated factor matrix, together with the communalities for the variables, are given in Tables IX and X, respectively. The descriptions and analytical interpretations of the 29 rotated factors are presented in the remainder of this section of the chapter. In so doing, each factor is described as a separate entity. However, as indicated in Chapter II in terms of practical application and interpretation the reader is reminded that a given physician may well be characterized by more than one of these descriptive categories or factors.

Factor A has high loadings on all variables involving colleague nominations and the rating of clinical excellence by the College of Medicine department heads. Therefore, an appropriate title for this factor might be Professional Recognition for Achievements. In addition, high scorers have attained higher ranks on the clinical faculty of the College of Medicine, have been more mobile than their lower scoring colleagues, read an above average number of papers at scientific and professional society meetings, and have achieved some degree of national recognition, in that they have been asked to serve as journal editors for professional publications. Overall, the impression created by this factor is that of a physician who has achieved both a high level of visibility within the profession and considerable status among his medical peers.

The cluster of high loadings on Factor B imply a factor dealing with caution and thoroughness in all dealings with patients, thus suggesting the title of Diagnostic Thoroughness. The physician characterized by this factor restricts his practice to a few patients per day, thereby allowing ample time to examine, diagnose, and communicate his findings to the patient. In addition, he consults more with other physicians and relies less on drug detail men to keep informed on pharmaceutical developments than does the average specialist. As expected, these physicians work in hospitals judged to be of superior quality and they tend to be regarded by their peers as outstanding contributors to the field of medicine. Perhaps because of the smaller volume of patients, high scorers have a lower-then-average income. If reflected, the factor loadings describe a busy, financially successful physician with a large practice who contributes primarily through the quantity of people reached. It is worth noting that interrelationships of the variables on this factor have been observed at least in part, by other independent investigators (Peterson, et al., 1956; Peterson, 1963; Anderson & Feldman, 1956).

Since Factor C's highest loading is on the variable measuring the degree to which a physician considers psychological factors in providing care to patients, it might best be titled Psychosomatic Orientation. As expected, persons scoring high tend to be in individual, group, or clinic practice rather than on a full-time hospital staff. Surprisingly, these persons also state that they derive considerable satisfaction from participating in those activities that are characteristic of medical practice. Secondary factor loadings were also obtained on the variables dealing with the number of postgraduate courses taken and the number of scientific and professional society memberships.

In some ways, Factor D appears to involve the traditional "family doctor" pattern in that a common element running through its variables is the physician's Willingness to Provide Special Attention to Patients in his care. He makes numerous house calls, works longer hours than his colleagues, makes frequent use of consultants, and spends an above average amount of time examining his patients on their first visit. This interpretation is strengthened by his tendency, when asked what he has contributed to science, medicine, or society, to elicit accomplishments directly related to medicine. Contrary to the findings of other researchers (Peterson, et al., 1956; Anderson & Feldman, 1956), this family doctor pattern is also associated with a "doctor's doctor" pattern. Specifically, the physician characterized by this factor is frequently nominated as a preferred consultant and outstanding contributor by both general practitioners and his specialist peers. Finally, his contributions, according to expert medical judges, tend to be of superior quality.

The highest loading variables on Factor E rather clearly deal with Medical Charity Work. These variables describe a physician who provides an above average amount of free medical work, not only intentionally and voluntarily, but also involuntarily, through failure of a significant number of his patients to pay their bills. Concerning the latter, it is quite possible that the reason patients neglect to pay for the physician's services is because he isn't vitally concerned with reimbursement and therefore fails to press his bill collecting. As is to be expected, the high scorer deals with patients of lower socio-economic status. Other variable loadings portray a physician who is relatively lax about his appointment schedule, who practices in a group or clinic setting, who works in only one or two hospitals, who does not belong to many professional societies, and who takes more than the average amount of post-doctoral work.

Since Factor F's higher loadings are on variables dealing with the length and variety of residency experiences, it might be appropriately titled Prolonged Residency Training. It is interesting to note that during residency the high scoring physician tended to move from one hospital to the next, but, once residency was completed, he settled into a local practice and has since moved less than the average specialist.

Factor G seems to be Level of Medical Specialization and Attainment, since its highest loading indicates the physician is in a high status specialty. Although he also tends to hold memberships in highly respected scientific or professional societies, this could be a function of his specialty certification: i.e., in some select societies specialty certification is prerequisite to membership. Moreover, high loadings on the grade-point-average variables, on length of residency, and on average number of hospitalized patients are also probably a function of the physician's level of specialization. In other words, high status specialties generally require superior academic performance for entry and a lengthy period of training; furthermore, as specialization increases the seriousness of the diseases treated increases. Secondary positive loadings also appeared on income, number of honorary compendium listings, and evaluations by expert judges for clinical excellence.

With Factor H being characterized by a large number (but not high quality) of hospital duties, it could be labeled a Quantity of Hospital Responsibilities factor. Despite the excessive hospital commitments, the high scorer on this factor devotes a substantially greater-than-average amount of time to his medical practice. Although he tends to treat patients that are low on the socio-economic ladder, he also has an above average annual income. With this income he is able to have a well-equipped office with a large ancillary staff of nurses, technicians, etc. In view of this factor pattern, one would almost expect the obtained negative loading for national recognition in terms of listings in honorary compendiums.

Factor I, a companion to Factor H (i.e., the two factors are orthogonal), loaded most heavily on the variable measuring quality (but not quantity) of hospital duties. Accordingly, it is titled Quality of Hospital Responsibilities. In his practice, the physician characterized by this factor employs a sizeable nursing staff which assists him in closely adhering to his appointment schedule. In addition, he utilizes the newest drugs available, places heavy emphasis on psychological or psychosomatic factors as causal agents in medical diseases, and exerts extra time and effort in explaining his diagnoses to the patients in his care. General practitioners, but not specialist colleagues, consult with this type of physician and generally nominate him as an outstanding contributor to medicine.

In general, a main impression of Factor J is that of a specialist who has achieved relatively high status in the medical profession essentially through administrative or supervisory contributions. This Medical Supervisory Responsibilities factor is represented by a physician who has a small staff of subordinate younger doctors, engages in a great deal of consulting, belongs to highly respected scientific and professional societies, and holds editorship positions for some professional journals. With such visibility, it is not surprising that such a person has achieved some degree of national recognition, as indicated by being listed in such honorary compendiums as Who's Who in American Medicine.

The high scorer on Factor K, Medical Consulting and Liaison, claims other physicians frequently seek his judgment at both a formal and an informal level for consultation on their medical problems. He maintains a well-equipped office with a large ancillary technical staff and treats his patients in hospitals judged to maintain superior standards of medical care. From this, one gets the impression of an established medical specialist. However, other secondary loadings show this type of physician is not only younger than most of his associates but also has been quite mobile in his professional positions.

Factor L might best be titled Attainment in Research, since the person characterized by it has been involved at a responsible level in considerable medical research. Also, this type of specialist serves on scientific advisory boards, delivers papers at scientific meetings, and spends much of his time reading and reviewing scientific and professional journal articles. Since he has won both honors and recognition for his contributions, it appears his research is of significant value to the profession. Moreover, his own self-concept seems to agree with these findings: specifically, he considers his most important contributions to be those directly related to medicine. In turn, these contributions are regarded as high in quality by expert medical judges. Overall, a highly consistent pattern of a research or science orientated medical specialist emerges.

The two highest loading variables on Factor M indicate the high scorer has been productive in the area of scientific and professional journal publications, both in terms of the number of articles written and in his relative contribution to the articles (i.e., he has tended to be sole or senior author rather than the junior author). As a result, this specialist now enjoys a great deal of visibility within the profession: he has received formal honors for his accomplishments, is listed in honorary compendiums, and is nominated as an outstanding contributor by his local specialist colleagues. As with Factor L, a rather consistent pattern of a research oriented physician is presented. In Factor M, formal expression is made by delivering papers at scientific and professional meetings. In this factor expression is made through journal publications. Thus, an appropriate title is that of Attainment in Publications.

Factor N is complex and somewhat difficult to interpret. The variable with the largest loading on the factor indicates that when the high scorer is asked what his most important contributions have been he tends to give a large number which are general contributions to society rather than contributions which are made specifically in his capacity as a doctor. However, what medical contributions he does elicit are regarded as important by expert medical judges. He tends to be practicing in a hospital, a type of practice which perhaps is less of a drain on his energies than would be individual, group, or clinic types of practice, and which leaves him freer to make contributions as a responsible citizen. This interpretation is supported somewhat by the fact that he is active in community organizations. His overall attainment is considered to be above average by expert judges. All in all, perhaps the most appropriate title for this factor would be *Self-Evaluated Contribution to Society*.

The only substantial loading on Factor O is on the physicians' self-ratings of success. The secondary loadings do not fall into a consistent, interpretable pattern. Obviously, then, this factor involves *Self-Evaluated Overall Professional Success*. Also, it should be emphasized that it fails to load on any of the other "success" measures, such as peer evaluations and ratings of expert judges. Thus, in terms of the results obtained specialists scoring high on this factor have an exaggerated self-concept of achievement that is not in agreement with other more tangible indices.

Factor P seems to involve the source, namely, scientific and professional journals, on which the doctor relies most heavily in keeping informed about his profession, thus the title *Keeping Abreast by Means of Journal Reading*. This tendency to go to original rather than secondary sources implies a cautious, critical-thinking specialist whose self-discipline is such that he exerts extra effort to be thorough in all phases of his medical practice. In partial support of this, secondary loadings describe a physician that takes an above average amount of time for his first-visit examinations and sends his patients to hospitals that provide superior medical care. Moreover, the specialist typified by this factor belongs to numerous professional societies of superior quality, has received formal professional honors for his accomplishments, and is rated above average by expert medical judges. All in all, there is some suggestion that physicians who use journals as their means of keeping up also display a high level of performance in a number of different areas.

Factor Q is a source-of-information factor, too, specifically one that is related to postgraduate education. It shows that doctors who take a relatively large number of formal postgraduate courses for academic credit take a relatively small number of refresher courses and vice versa. The physician taking a large number of *refresher* courses has been less mobile than his specialist colleagues, confines his practice to patients of upper socio-economic levels, and treats them in low status hospitals. Overall, then, an appropriate title for this factor is *Keeping Abreast by Means of Refresher Courses*.

Factor R, still another information source factor, is entitled *Keeping Abreast by Means of Drug Detail Men* because the physician characterized by it utilizes both drug detail men and the newest drugs provided by them as resources. The secondary loadings show that in his practice, which is either an individual or hospital practice rather than a group or clinic practice, this type of doctor is sought out by other physicians for consultation and also sends a large proportion of his own patients to colleagues for consultation on their medical problems.

Factor S, the last information source factor, is titled *Keeping Abreast by Means of Uncommon Techniques*, since the doctor typified by it uses unorthodox or unusual techniques in keeping up with developments in his field; e.g., tape recorded digests of journal articles which the physician can listen to while he is shaving, driving, etc. Also, the high scorer has an unimpressive office staffed by a large number of clerical, rather than nursing or technical personnel. Contrary to expectations, other loadings indicate the specialist has received some formal honors for his accomplishments and has been nominated by general practitioners as both a preferred consultant and an outstanding contributor to medicine.

The highest single loading on Factor T is on the variable measuring the number of scientific and professional society meetings attended annyally. Accordingly, the factor is named *Participation in Professional Societies*. The next highest loading shows this type of specialist derives considerable staisfaction from most of the professional activities in which he engages. Secondary loadings concerning his office practice indicate that he treats persons of lower socio-economic status, rigidly maintains his appointment schedule, and places value on spending enough time with his patients to ensure their understanding of his diagnoses. Regarding professional recognition, the high scorer has an above average reputation among his specialist colleagues but below average with general practitioners, he has been asked to serve on some journal editorship posts, and he is occasionally asked to deliver speeches to laymen groups.

Factor U should probably be called *Civic Participation*. Its three highest loadings all deal in one way or another with contacts with laymen. Thus one major contribution of high scorers is providing a linkage between medicine and society. Other loadings form a complex pattern, and indicate that the high scorer, in a self-report of his contributions, can and will point to many things which are above average, and has been honored for his contributions but works in below average hospitals, has a relatively small staff and is somewhat dissatisfied professionally. Thus there is some suggestion that the high scorer, being somewhat frustrated with his profession, may have turned to contacts with laymen as an alternative source of satisfaction.

In general, Factor V, Leisure Planning, represents a physician who efficiently organizes his time so that he enjoys a shorter-then-average work week and has considerable opportunities for regular leisure activities. However, when his patients do need hospitalization he tends to send them to hospitals providing better treatment. This could be attributed to his poorly equipped office. Contrary to the findings of Peterson, et al. (1956), such physicians who efficiently plan their leisure time are rated below average in terms of professional honors received and quality of contributions to the profession.

In view of its major factor loadings, Factor W presents the picture of a financially successful physician with an impressive office who is able to take extended vacations. In view of this, it is surprising that he has an above average number of patients who fail to pay their bills. Among both his specialist colleagues and general practitioner associates he has achieved an above average professional reputation. Overall, this factor might best be called Need for Long Vacations--Financial Success.

Factor X primarily involves the impact the physician had on the person who interviewed him for this research, and, therefore, should probably be called Interviewer's Rating of Likeability. High scorers might have above average social skills and can (when they want to) move easily among people. It is also felt worth noting that, despite considerable intimate contact with the doctors in which many aspects of their professional life was discussed, the project interviewers' evaluations of the physicians generally failed to show a relationship to any of the other performance measures collected. This should serve as a caution to future researchers whose training lies outside of the areas of medical science and practice. It may also suggest that additional views of the physician may be seen by an interviewer or by his patients, etc.

Factor Y and Factor Z are both chiefly concerned with the doctor's evaluation of what constitutes success within his own field or specialty. Factor Y represents a specialist who is quite typical in his analysis of the factors making for success and might, therefore, be titled Orthodox Success Image. On the other hand, physicians typified by Factor Z have unusual or uncommon ideas about success and it could be called Unorthodox Success Image. Otherwise, there is little in the factor patterns that distinguish high scorers on either factor from other specialists. Thus, once again attention is called to the fact, as in Factor O, that the specialist's self-concepts about his profession do not necessarily relate to other more objective and diverse measures of on-the-job performance.

Factor AA has its highest loading on the control variable dealing with the age the medical degree was received, thus the title Late Attainment of M.D. Degree. Smaller loadings showed the physician characterized by this factor does not hospitalize many of his patients and works in only a few hospitals. He tends to practice in a clinic or group partnership and relies rather heavily on drug detail men to keep him posted on pharmaceutical developments. In terms of visibility, some national recognition has been achieved as evidenced by listings in honorary compendiums, such as Who's Who in American Medicine. In general, an impression is given of a physician who, after starting late in his career, is content to confine himself to medical practice per se by using readily available techniques (e.g., drug detail men to keep abreast and a clinic practice to supply patients, technical equipment and advice, and a steady income), and without venturing into teaching, research, or other areas which might demand additional energies.

As with the full-time College of Medicine study reported in Chapter II, academic performance in this sample of urban medical specialists proved to be independent of performance as a physician. Specifically, Factor BB involved Achievement in Premedical Education and Factor CC Achievement in Medical Education. Such a finding can be justified for undergraduate education on the basis of the traditional liberal arts argument of "education for education's sake," but such a position seems hardly tenable for the type of training that is provided in our medical schools. Even further emphasis is given to questioning grades as effective predictors of physician performance when we return to our rotated factor matrix (Table X). No single measure of criterion performance fell into more than 9 of the 29 factors, the average number being approximately 3, and premedical and medical school grades each fell into only 1 of the 29 factors. Thus, once again, the authors reiterate that such results justify considerable research on medical school selection and performance evaluation policies.

## Conclusions:

Prior to the initiation of this phase of the study, the project staff solicited numerous physicians for their reaction and suggestions. In responding, the concensus of opinion was to the effect that such an investigation should not be undertaken, their objections being based on the contention that success as a physician is too complex to yield meaningful measures of performance from a handful of psychometric scores. In some respects this assumption has been affirmed by the present study: the single, most inportant finding was the great complexity of the criterion area. As with the study of the full-time faculty of the College of Medicine, one factor was found for approximately every three variables or measures included in the analysis.

Moreover, the complexity observed is undoubtedly only a conservative estimate of the real inherent complexity of the urban specialist's performance. In any pioneering study, such as the present one, an all pervasive consideration is that of maximizing the cooperation of the population investigated. Accordingly, in this project measures of some sensitive areas were intentionally omitted in the data collection. For example, no attempt was made to have the physicians studied evaluated by their respective patients. For another illustration, direct assessment of the quality of medical care provided by the individual specialists, through such techniques as the Medical Audit (Mortrud, 1953), was not undertaken. These and other measures are potentially of considerable value, especially since they do not appear to overlap to any great extent with the measures used in the present study. Thus, follow-up studies of the criterion problem of medical specialists should incorporate such features in their data collection and analysis.

To summarize, there are many different kinds of contributions to which a medical specialist can devote his energies and efforts. While a physician can focus his efforts towards a larger or smaller number of these kinds of contributions, it is unlikely that an individual can devote much energy to each and every one of the available kinds of contributions. As a result, the total amount of energy available, the selection of outlets for that energy, and the effectiveness with which one's efforts are expended in those outlets are important in assessing the overall accomplishments and contributions of an individual. All of these considerations should be utilized in evaluating medical specialists.

## Table VI

Title and Source for Each Variable for Urban Specialist Sample

| | Title | Source |
|---|---|---|
| 1. | Number of Times Nominated as Outstanding Contributor by Urban Specialist Colleagues | Colleagues |
| 2. | Number of Times Nominated as Preferred Consultant by Urban Specialist Colleagues | Colleagues |
| 3. | Number of Nominations as Outstanding Contributor or Preferred Consultant by General Practitioners | Interview |
| 4. | Number of Times Nominated as Outstanding Contributor by College of Medicine Faculty | Interview |
| 5. | Rating of "Clinical Excellence" by Medical College Department Head | Department Head |
| 6. | Number of Different Residency Hospitals | Compendiums |
| 7. | Number of Years Spent in Residency | Compendiums |
| 8. | Judged Quality of National Board Certification | Expert Judges |
| 9. | Present College of Medicine Clinical Faculty Rank | Official Records |
| 10. | Mobility Rate in Professional Positions Since Receiving M.D. | Interview and Official Records |
| 11. | Total Number of Listings in Honorary Compendiums | Compendiums |
| 12. | Gross Income from Medical Profession | Interview |
| 13. | Number of Current Memberships in Scientific and Professional Societies | Interview |
| 14. | Average Judged Quality of Societies in Which Membership is Current | Interview and Expert Judges |
| 15. | Overall Occupational Satisfaction | Questionnaire |
| 16. | Number of Times During Career Invited to Serve as Editor of Scientific or Professional Journal | Interview |
| 17. | Number of Times During Career Invited to Serve on Scientific and Professional Advisory Boards | Interview |
| 18. | Average Judged Quality of Scientific and Professional Awards Received During Career | Interview and Expert Judges |
| 19. | Self-Reported Number of Contributions Made to Medicine | Interview |
| 20. | Average Judged Quality of Self-Reported Contributions Made to Medicine | Interview and Expert Judges |
| 21. | Self-Reported Number of Non-Medical Contributions to Society | Interview |
| 22. | Total Number of Papers Presented at Scientific and Professional Meetings During Career | Interview |
| 23. | Average Number of Journal Publications Per Year Since Receiving M.D. | Interview and Compendiums |
| 24. | Average Level of Contribution to Publications as Indicated by Senior vs. Junior Authorship Status | Interview and Compendiums |
| 25. | Number of ResearchProjectswith Which Involved During Career | Interview |
| 26. | Number of Scientific and Professional Journals Reviewed Regularly | Interview |
| 27. | Number of Subscriptions to Scientific and Professional Journals | Interview |
| 28. | Number of Articles in Scientific and Professional Journals Read in Detail Each Month | Interview |
| 29. | Average Number of Society Meetings Attended Annually | Interview |
| 30. | Number of Postgraduate Courses Taken During Career | Interview |
| 31. | Number of Refresher Courses Taken During Career | Interview |
| 32. | Physician's Evaluation of Usefullness of Drug Detail Men | Interview |
| 33. | Extent of Physician's Experimental Use of Drugs Provided by Drug Detail Men | Interview |
| 34. | Number of Techniques Other Than Journals, Meetings, and Drug Detail Men Used in Keeping Abreast | Interview |
| 35. | Average Number of Formal Medical Consultations Called into Monthly | Interview |
| 36. | Average Number of Informal Medical Consultations Called into Monthly | Interview |
| 37. | Percentage of Patients on Which Consultations are Requested | Interview |
| 38. | Number of Patients Seen Per Day | Interview |
| 39. | Average Amount of Time Spent with Patients on First Visit | Interview |
| 40. | Average Amount of Time Spent in Explaining Diagnoses to Patients | Interview |
| 41. | Proportion of Office Patients Treated Without Charge | Interview |
| 42. | Proportion of Office Patients That Fail to Pay Physician for Services Rendered | Interview |
| 43. | Self-Estimated Average Socioeconomic Level of Patients | Interview |
| 44. | Degree to Which Physician Adheres to Patient Appointment Schedule | Interview |
| 45. | Average Number of House Calls Made Per Week | Interview |
| 46. | Degree to Which Physician Considers Psychological Factors in Diagnoses | Interview |
| 47. | Average Number of Hours Per Week Devoted to Medical Practice | Interview |
| 48. | Average Number of Hospitalized Patients | Interview |
| 49. | Number of Hospitals in Which Physician Works | Interview |
| 50. | Average Judged Quality of Hospitals in Which Physician Works | Interview and Expert Judges |
| 51. | Number of Hospitals in Which Physician Maintains Courtesy Priviledges | Interview |
| 52. | Average Judged Quality of Hospitals in Which Physician Maintains Courtesy Priviledges | Interview |
| 53. | Number of Formal Responsibilities Physician has in Hospitals | Interview |
| 54. | Average Judged Quality of Hospital Responsibilities | Interview and Expert Juuges |
| 55. | Self-Estimated Value of Office Equipment | Interview |
| 56. | Number of M.D. Assistants on Physician's Ancillary Staff | Interview |
| 57. | Number of Nurses on Physician's Ancillary Staff | Interview |
| 58. | Number of Technicians on Physician's Ancillary Staff | Interview |
| 59. | Number of Clerical, Administrative, and Janitorial Workers on Physician's Ancillary Staff | Interview |
| 60. | Average Number of Speeches on Medical Topics to Laymen Groups Per Year | Interview |
| 61. | Average Amount of Vacation Taken Annually | Interview |
| 62. | Extent to Which Physician Plans and Maintains Leisure Time Activities | Interview |
| 63. | Number of Current Memberships in Social and Avocational Organization | Interview |
| 64. | Number of Current Memberships in Civic and Political Organizations | Interview |
| 65. | Characteristics Physician Considers Important for Success in Medicine: Number of "Common" Responses | Interview |
| 66. | Characteristics Physician Considers Important for Success in Medicine: Number of "Uncommon" Responses | Interview |
| 67. | Characteristics Physician Considers Important for Success in Medicine: "Commonness" of Responses Elicited | Interview |
| 68. | Self-Rating of Success in Medicine | Interview |
| 69. | Expert Panel Rating of Overall Performance Based on All Available Information | Expert Judges |
| 70. | Interviewer Rating of Condition of Physician's Office | Project Interviewer |
| 71. | Interviewer Rating of Likeability | Project Interviewer |
| 72. | Interviewer Rating of Physician's Involvement in This Project | Project Interviewer |
| 73. | Age at Which Received M.D. | Control Variables |
| 74. | Number of Years Between Receiving M.D. and Receiving National Board Certification | Control Variables |
| 75. | Years of Experience Since Receiving M.D. | Control Variables |
| 76. | Individual Practice Rather Than Group, Clinic or Hospital Practice | Control Variables |
| 77. | Hospital Practice Rather Than Individual, Group, or Clinic Practice | Control Variables |
| 78. | Undergraduate Grade Point Average | Official Transcripts |
| 79. | Grade Point Average for First Two Years of Medical School | Official Transcripts |
| 80. | Grade Point Average for Last Two Years of Medical School | Official Transcripts |

# Table VII

Intercorrelations of Variables for Urban Specialist Sample

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
| 2 | 44 | — ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
| 3 | 28 | 33 | — |||||||||||||||||||||||||||||||||||||||||||||||||||||||||
| 4 | 56 | 33 | 19 | — ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
| 5 | 35 | 24 | 16 | 42 | — |||||||||||||||||||||||||||||||||||||||||||||||||||||||
| 6 | -10 | 05 | -02 | -02 | 02 | — ||||||||||||||||||||||||||||||||||||||||||||||||||||||
| 7 | 00 | 16 | 08 | -04 | 07 | 52 | — |||||||||||||||||||||||||||||||||||||||||||||||||||||
| 8 | 24 | 27 | 11 | 14 | 13 | 15 | 28 | — ||||||||||||||||||||||||||||||||||||||||||||||||||||
| 9 | 29 | 28 | 12 | 38 | 29 | -24 | -19 | 20 | — |||||||||||||||||||||||||||||||||||||||||||||||||||
| 10 | 08 | 05 | -06 | 12 | 16 | 14 | 21 | -07 | -12 | — ||||||||||||||||||||||||||||||||||||||||||||||||||
| 11 | 29 | 10 | 09 | 36 | 12 | -17 | -03 | 21 | 42 | 71 | — |||||||||||||||||||||||||||||||||||||||||||||||||
| 12 | 03 | 23 | 11 | 00 | 06 | 17 | 14 | 30 | 18 | -04 | 08 | — ||||||||||||||||||||||||||||||||||||||||||||||||
| 13 | 07 | -07 | -03 | 11 | 02 | -03 | 03 | 22 | 14 | -09 | 32 | 19 | — |||||||||||||||||||||||||||||||||||||||||||||||
| 14 | 18 | 10 | 06 | 20 | 16 | -01 | 12 | 45 | 24 | -06 | 29 | 17 | 36 | — ||||||||||||||||||||||||||||||||||||||||||||||
| 15 | 06 | -04 | -05 | 00 | -04 | 05 | 00 | -06 | 02 | -03 | 07 | 07 | 10 | 05 | — |||||||||||||||||||||||||||||||||||||||||||||
| 16 | 30 | 09 | 04 | 26 | 09 | -06 | -06 | 15 | 18 | -07 | 33 | 02 | 11 | 23 | 10 | — ||||||||||||||||||||||||||||||||||||||||||||
| 17 | 14 | 08 | -04 | 14 | 08 | -11 | -16 | 12 | 07 | -01 | 15 | 03 | 06 | 04 | 05 | 17 | — |||||||||||||||||||||||||||||||||||||||||||
| 18 | 31 | 13 | 16 | 22 | 06 | -14 | -16 | 17 | 14 | 00 | 15 | 12 | 04 | 13 | 05 | 18 | 26 | — ||||||||||||||||||||||||||||||||||||||||||
| 19 | 29 | 20 | 22 | 06 | 04 | -09 | -09 | 06 | 08 | -11 | 18 | 02 | 08 | 09 | -05 | 02 | 06 | 23 | — |||||||||||||||||||||||||||||||||||||||||
| 20 | 25 | -02 | 07 | 11 | 12 | -18 | -11 | 14 | 13 | -03 | 31 | -05 | 10 | 14 | 04 | 03 | 16 | 21 | 41 | — ||||||||||||||||||||||||||||||||||||||||
| 21 | 00 | 03 | 03 | 09 | 02 | 08 | 02 | -03 | 03 | -06 | 04 | 07 | 19 | -08 | 07 | -08 | 00 | 05 | 04 | 17 | — |||||||||||||||||||||||||||||||||||||||
| 22 | 21 | 13 | -04 | 26 | 10 | -11 | -13 | 21 | 25 | 03 | 38 | 09 | 18 | 26 | 07 | 25 | 28 | 35 | 18 | 24 | 05 | — ||||||||||||||||||||||||||||||||||||||
| 23 | 28 | 16 | 07 | 25 | 02 | -17 | -02 | 12 | 19 | -03 | 35 | 07 | 16 | 12 | 00 | 20 | 22 | 29 | 25 | 17 | 08 | 31 | — |||||||||||||||||||||||||||||||||||||
| 24 | 25 | 07 | 04 | 17 | 08 | -10 | 05 | 04 | 16 | -03 | 17 | 11 | 15 | 01 | 03 | 13 | 04 | 22 | 09 | 01 | 06 | 17 | 61 | — ||||||||||||||||||||||||||||||||||||
| 25 | 11 | 03 | -10 | 16 | 05 | -04 | -04 | 09 | 04 | 08 | 11 | 02 | -01 | 03 | -06 | 11 | 22 | 19 | 09 | 07 | -13 | 23 | 31 | 12 | — |||||||||||||||||||||||||||||||||||
| 26 | 21 | 02 | -01 | 20 | 02 | -04 | 07 | 19 | 12 | -01 | 22 | 02 | 27 | 31 | 06 | 14 | 28 | 29 | 16 | 22 | 04 | 40 | 24 | 07 | 16 | — ||||||||||||||||||||||||||||||||||
| 27 | 15 | 09 | 04 | 17 | 04 | 01 | 09 | 23 | 07 | 09 | 18 | 07 | 26 | 29 | 09 | 14 | 17 | 23 | 01 | 04 | 02 | 27 | 17 | 04 | 08 | 57 | — |||||||||||||||||||||||||||||||||
| 28 | 09 | 01 | -06 | 07 | -02 | 06 | 13 | 12 | -03 | 03 | 11 | -10 | 05 | 19 | 01 | 07 | 11 | 22 | 05 | 13 | -09 | 21 | 06 | 02 | 19 | 34 | 25 | — ||||||||||||||||||||||||||||||||
| 29 | 13 | 09 | -13 | 05 | -05 | 06 | 03 | 10 | 00 | -02 | 06 | 06 | 16 | 15 | 11 | 07 | 07 | 11 | 06 | 13 | 05 | 08 | -06 | -04 | -09 | 12 | 07 | 03 | — |||||||||||||||||||||||||||||||
| 30 | 00 | 01 | 03 | -09 | -17 | 08 | -13 | 05 | -01 | -08 | 01 | 04 | 03 | 03 | 08 | 01 | 06 | 17 | 18 | 13 | 11 | 15 | -01 | -10 | 00 | 05 | 04 | 17 | 00 | — ||||||||||||||||||||||||||||||
| 31 | 05 | 02 | 09 | 08 | -02 | -10 | 03 | 04 | 05 | -13 | 05 | 00 | 12 | 05 | -10 | 14 | 10 | 07 | -06 | -08 | 02 | -03 | 03 | 02 | -03 | 06 | 09 | -06 | 00 | -17 | — |||||||||||||||||||||||||||||
| 32 | 01 | 10 | 05 | -02 | -02 | -08 | -09 | -01 | 10 | -17 | 05 | 04 | -02 | 04 | 09 | -02 | 03 | 07 | 04 | 00 | 08 | 06 | 02 | -05 | -02 | 01 | 04 | -08 | 05 | 05 | 08 | — ||||||||||||||||||||||||||||
| 33 | -11 | 09 | 11 | -05 | -07 | 07 | -04 | -07 | 04 | -07 | 07 | 06 | -02 | 02 | 07 | 05 | -02 | 09 | 06 | -09 | 03 | 07 | 00 | 00 | 04 | 05 | 10 | 07 | 03 | 05 | 10 | 17 | — |||||||||||||||||||||||||||
| 34 | 16 | 13 | 19 | 08 | 03 | 04 | 05 | 04 | 03 | 00 | -09 | 03 | 03 | -07 | 04 | 03 | 05 | 15 | 09 | 04 | 09 | -08 | -04 | 03 | 06 | -13 | -05 | -04 | 05 | 14 | 05 | 10 | 01 | — ||||||||||||||||||||||||||
| 35 | 04 | 07 | 04 | 06 | 07 | 02 | 06 | 18 | 14 | [illegible] | 18 | 16 | 11 | 21 | -17 | 18 | 14 | 14 | -03 | 02 | -05 | 26 | 16 | 09 | 15 | 14 | 17 | 14 | -09 | 03 | -05 | -07 | 05 | 05 | — |||||||||||||||||||||||||
| 36 | 16 | 08 | 04 | 05 | -03 | -09 | -06 | 17 | 12 | 09 | 11 | 11 | 07 | 14 | -10 | 08 | 16 | 21 | 12 | 02 | 04 | 04 | 16 | 16 | 13 | 10 | 11 | 07 | 16 | -05 | 04 | -03 | -13 | 04 | 19 | — ||||||||||||||||||||||||
| 37 | 20 | 11 | 12 | 12 | -10 | -12 | -06 | 11 | 06 | -07 | 15 | 02 | -05 | 11 | -02 | 01 | 17 | 15 | 27 | 23 | 02 | 15 | 09 | -02 | 10 | 18 | 18 | 14 | 08 | 15 | -03 | 21 | -05 | 10 | 00 | 12 | — |||||||||||||||||||||||
| 38 | -19 | 01 | 11 | -14 | -20 | -01 | -12 | 01 | 06 | -26 | -02 | 18 | 15 | 01 | 12 | 05 | 02 | -04 | -03 | -06 | 10 | 04 | 00 | -08 | -07 | 00 | -02 | -05 | 10 | 15 | 02 | -06 | 18 | 06 | -01 | 00 | -27 | — ||||||||||||||||||||||
| 39 | 28 | 09 | 12 | 24 | 03 | -04 | 05 | 00 | -10 | 21 | 06 | -16 | -04 | -01 | 05 | 07 | 06 | 25 | 20 | 12 | -12 | 05 | 11 | 11 | 19 | 24 | 17 | 19 | 15 | 04 | -07 | -01 | -01 | 14 | -02 | 11 | 25 | -31 | — |||||||||||||||||||||
| 40 | 16 | 04 | -01 | 19 | -05 | -07 | -04 | -05 | -11 | 02 | 11 | -07 | 11 | 04 | 09 | 07 | 08 | 21 | 19 | 17 | -05 | 13 | 21 | 06 | 13 | 18 | 15 | 09 | 11 | 09 | -07 | 08 | -02 | -12 | 04 | 07 | 27 | -19 | 36 | — ||||||||||||||||||||
| 41 | 04 | 14 | 09 | 05 | 04 | 12 | -01 | 07 | 00 | 03 | -01 | -02 | -12 | 04 | 00 | 02 | 05 | 05 | 01 | 01 | 01 | 11 | -11 | -11 | -01 | 03 | 07 | 06 | -10 | 15 | 19 | 02 | 01 | 01 | 04 | 10 | 10 | 04 | 01 | 00 | — |||||||||||||||||||
| 42 | -05 | -03 | -16 | -10 | -05 | 17 | 09 | 10 | -06 | -04 | 00 | -12 | -15 | 00 | -03 | 02 | 00 | -01 | -09 | -05 | 08 | 08 | -06 | -12 | -03 | 02 | 07 | 09 | -04 | 10 | 04 | -14 | 03 | -07 | -01 | 01 | -04 | 00 | -03 | -05 | 28 | — ||||||||||||||||||
| 43 | 05 | 09 | 16 | 02 | 07 | -04 | 04 | 04 | 04 | -03 | 03 | 03 | 12 | 01 | 05 | 11 | 00 | 04 | 03 | -02 | -10 | -07 | 02 | 06 | -05 | 05 | 12 | 03 | -09 | -01 | 20 | 14 | 14 | 00 | -03 | -02 | 00 | 00 | 01 | 00 | -13 | -15 | — |||||||||||||||||
| 44 | 18 | 00 | 12 | 17 | 12 | 01 | -01 | -12 | -03 | -01 | 06 | 02 | 13 | -02 | 02 | 04 | 03 | 09 | 03 | 01 | 05 | -01 | 02 | 13 | 00 | 11 | 05 | 02 | 12 | -07 | 01 | -07 | -03 | 15 | 02 | 01 | 04 | -14 | 19 | 15 | -09 | -24 | 01 | — ||||||||||||||||
| 45 | 24 | 18 | 86 | 13 | -01 | 01 | 01 | 01 | 04 | -10 | 12 | -06 | -05 | 04 | 02 | 15 | 05 | 13 | 26 | 15 | 08 | -05 | 11 | -06 | -10 | 09 | 12 | 02 | 00 | 09 | 11 | -06 | -03 | 13 | -16 | 07 | 15 | 13 | 26 | 13 | 17 | 06 | 12 | 01 | — |||||||||||||||
| 46 | 02 | -06 | -02 | 00 | -05 | 04 | -11 | -22 | 01 | -02 | 00 | -11 | 10 | -09 | 15 | -04 | 05 | 00 | -01 | 03 | 10 | -09 | -12 | -07 | -01 | -06 | -01 | 04 | 01 | 13 | 06 | 11 | -03 | 00 | -18 | 04 | 15 | -09 | 08 | 16 | 08 | -07 | 09 | 09 | 16 | — ||||||||||||||
| 47 | 05 | 18 | 19 | 03 | 16 | 14 | 16 | 04 | -02 | 11 | -07 | 15 | 11 | 11 | 01 | -08 | -03 | 09 | 10 | 03 | 05 | -05 | 01 | 04 | -09 | 17 | 18 | 15 | 07 | -08 | 04 | -09 | 08 | 07 | 04 | 06 | 00 | 08 | 24 | 14 | 07 | 00 | -09 | 07 | 22 | 01 | — |||||||||||||
| 48 | [illegible] | 26 | 25 | 14 | 17 | 04 | 14 | 35 | 17 | -02 | 04 | 26 | 05 | 20 | 03 | 14 | 09 | 17 | 12 | 16 | -01 | 11 | 10 | 08 | -01 | 12 | 06 | 05 | -07 | -02 | 04 | -03 | -02 | -03 | 03 | 14 | 03 | 10 | 03 | 06 | 06 | 07 | 00 | -07 | 09 | -06 | 29 | — ||||||||||||
| 49 | -03 | 21 | -05 | 04 | 18 | 16 | 10 | -03 | -06 | 15 | -09 | -03 | -06 | -10 | 01 | -01 | 14 | -07 | 01 | -01 | 15 | -16 | -06 | -02 | 03 | -21 | -10 | 05 | 04 | -07 | 06 | -04 | -07 | 19 | -03 | -10 | 20 | -10 | -07 | -15 | 02 | 04 | 01 | -04 | 14 | 04 | 12 | -02 | — |||||||||||
| 50 | 08 | 01 | 00 | 11 | -07 | -13 | -08 | 05 | 07 | -01 | 04 | -06 | 05 | 06 | -02 | 03 | 00 | 05 | 01 | -04 | -08 | 16 | 10 | 06 | 01 | 14 | 07 | 06 | -02 | -02 | -19 | 04 | -03 | -11 | -02 | 00 | 11 | -09 | 24 | 12 | -13 | -15 | 00 | -02 | 07 | -01 | -03 | 05 | -35 | — ||||||||||
| 51 | 13 | 22 | 12 | 14 | 14 | 04 | 05 | 09 | 03 | -07 | 02 | 00 | -03 | 19 | 00 | 01 | 00 | -03 | -01 | -14 | -01 | -04 | -01 | 03 | -03 | 08 | 15 | 02 | -05 | 04 | 03 | 11 | 01 | -01 | 05 | 03 | 01 | -16 | 06 | 03 | 08 | 21 | -03 | 02 | 05 | -03 | 15 | 17 | -10 | 06 | — |||||||||
| 52 | -03 | -04 | 10 | 04 | 11 | -01 | 03 | 04 | -05 | 07 | -01 | 02 | -07 | 08 | 06 | 08 | -03 | -05 | 04 | -16 | -07 | 00 | 01 | -01 | 07 | -07 | 06 | 06 | -02 | 07 | -01 | -07 | -05 | 11 | 12 | 13 | 08 | 00 | 02 | -02 | -06 | 02 | -09 | 05 | -04 | -06 | 09 | -02 | -08 | 11 | 26 | — ||||||||
| 53 | 14 | 18 | 14 | 11 | 21 | 10 | 05 | 16 | 05 | 14 | -11 | 09 | -01 | 13 | -08 | -06 | 07 | 10 | 13 | 12 | 06 | 06 | -05 | -11 | 06 | 25 | 22 | 10 | 11 | 04 | 00 | 00 | 00 | 07 | 11 | 05 | 11 | 09 | 13 | 00 | 09 | 01 | -04 | -02 | 04 | 03 | 30 | 09 | 11 | -02 | 09 | 09 | — |||||||
| 54 | 11 | 12 | 20 | 02 | 12 | -14 | -01 | 19 | 13 | -17 | 06 | 03 | 07 | 10 | -05 | 08 | 05 | 13 | 01 | 02 | -18 | 01 | 09 | 09 | 08 | -01 | 05 | -01 | 05 | -06 | 08 | 00 | 12 | 09 | 08 | 11 | -04 | 04 | 10 | 14 | 03 | -01 | 10 | 10 | 06 | 01 | -04 | 06 | 02 | -04 | 11 | 07 | 07 | — ||||||
| 55 | 12 | 05 | 03 | -03 | -17 | -05 | -12 | 07 | 02 | -08 | 13 | 17 | 21 | 08 | 05 | -07 | 07 | 19 | 18 | 17 | 16 | 15 | 16 | 12 | 06 | 23 | 15 | 23 | -01 | 08 | 09 | -01 | -01 | 00 | 11 | 08 | 16 | 12 | 03 | 02 | 00 | -06 | -08 | -07 | 04 | 03 | 21 | 06 | -11 | 00 | 02 | -03 | 14 | 01 | — |||||
| 56 | 07 | -06 | 02 | 12 | -03 | -09 | -05 | -04 | 14 | 02 | 22 | 08 | 10 | 17 | -19 | 28 | -01 | 04 | 04 | 10 | 00 | 13 | 06 | 02 | 00 | 15 | 05 | -01 | -10 | 01 | 07 | 00 | 01 | -02 | 23 | 00 | 15 | -05 | 00 | 08 | 03 | 00 | -01 | 00 | -01 | -02 | -03 | -03 | -23 | 00 | -08 | 11 | -05 | -03 | [illegible] | — ||||
| 57 | 12 | 02 | 13 | 09 | -01 | -02 | -03 | -03 | -09 | -01 | 08 | -03 | 08 | -04 | 13 | 08 | 07 | 04 | 02 | 03 | -02 | 05 | 07 | -01 | 06 | 23 | 11 | -04 | 09 | -03 | 11 | -10 | 05 | -07 | -04 | 04 | 06 | 14 | 25 | 16 | 07 | 01 | 01 | 10 | 21 | 05 | 13 | 06 | -11 | 14 | -03 | 10 | 03 | 19 | 18 | -06 | — |||
| 58 | 04 | -01 | -11 | 07 | -06 | -07 | -01 | 07 | 14 | 14 | 15 | -04 | 01 | 05 | -02 | 05 | 06 | 08 | -10 | -03 | 03 | 13 | 12 | 15 | 22 | 26 | 13 | 23 | 05 | 00 | 04 | -09 | 07 | 03 | 24 | 25 | -02 | 02 | 16 | 02 | 10 | 08 | -11 | 03 | -08 | -14 | 09 | -04 | 03 | -12 | 03 | 15 | 06 | -02 | 13 | 07 | -05 | — ||
| 59 | -08 | 06 | 03 | -09 | -13 | 05 | 01 | 02 | -11 | 04 | -12 | 16 | -02 | -04 | -17 | -15 | 07 | 08 | 00 | -13 | -19 | 05 | -01 | 03 | 03 | 02 | 05 | 17 | -02 | 01 | 03 | -04 | 08 | 14 | 19 | -01 | -09 | 08 | -05 | -11 | 10 | -04 | -03 | 02 | -14 | -11 | 06 | -18 | 07 | -08 | -01 | 11 | 12 | -04 | 14 | 01 | -24 | 27 | — |
| 60 | 15 | -07 | 07 | 12 | 10 | 15 | 07 | -02 | -09 | 19 | -01 | -07 | 02 | 00 | 04 | 02 | 09 | 21 | 20 | 28 | 12 | 05 | -01 | 00 | 01 | 16 | 07 | 21 | 19 | 12 | 04 | 00 | 02 | 11 | 05 | 04 | 06 | -07 | 18 | 17 | 08 | 03 | 03 | 12 | 18 | 15 | 18 | 01 | 23 | -17 | 05 | -16 | 18 | -01 | 04 | 01 | -02 | 10 | 05 | — |
| 61 | 05 | 13 | 17 | 05 | 03 | -14 | -10 | 06 | 16 | -10 | 09 | 27 | 16 | 00 | -05 | -01 | -03 | 06 | 10 | -11 | -05 | 10 | 08 | 11 | 08 | 14 | 02 | -04 | 02 | 00 | 04 | 02 | 05 | -02 | -02 | 08 | 03 | 01 | 02 | 05 | -08 | -13 | 11 | 05 | 00 | -02 | -11 | -02 | -10 | 10 | -03 | 00 | -16 | 02 | 01 | -02 | -04 | 09 | 05 | -23 |
| 62 | -02 | -15 | -02 | 06 | -05 | -06 | -12 | -10 | -08 | -09 | -05 | -12 | -04 | -06 | 03 | -06 | 04 | -09 | -05 | -03 | 08 | 01 | -03 | -05 | 03 | -01 | -13 | -02 | 06 | 01 | 07 | 02 | -06 | -03 | -17 | -08 | 10 | 09 | -06 | -01 | -10 | -10 | 15 | 09 | 21 | 06 | -19 | -27 | 12 | 02 | -08 | -02 | -01 | 02 | -04 | -09 | -01 | -02 | -06 | 06 |
| 63 | 06 | 00 | 11 | 01 | -02 | 08 | -02 | 16 | -03 | -02 | -03 | 06 | 00 | 12 | -05 | 00 | 02 | 14 | 15 | 18 | 04 | 10 | 01 | 00 | -04 | 03 | 01 | 12 | 11 | 12 | -03 | -03 | 10 | -02 | -01 | 10 | 03 | -01 | 01 | 02 | 15 | -06 | -02 | -04 | 11 | 07 | -03 | 00 | 04 | -01 | -04 | -16 | 14 | 02 | -06 | 02 | -04 | -15 | 08 | 22 |
| 64 | 16 | 01 | 19 | -01 | 05 | -02 | -02 | -03 | -08 | -03 | 11 | 03 | 16 | 03 | -01 | 03 | 13 | 16 | 33 | 27 | 22 | 14 | 10 | 02 | 04 | 12 | 20 | 08 | 06 | 16 | 02 | -02 | 05 | 04 | 03 | 12 | 16 | 09 | 09 | 11 | 15 | 09 | -09 | 04 | 36 | 09 | 06 | 08 | 06 | -05 | 00 | -11 | 16 | 08 | 09 | 05 | 15 | -15 | -15 | 27 |
| 65 | 03 | 04 | 18 | 02 | 02 | 09 | 14 | 06 | -07 | -05 | 11 | 02 | 05 | 04 | -04 | 11 | -12 | 04 | 12 | -01 | 01 | -06 | 04 | -06 | -05 | 02 | 03 | -01 | 08 | 10 | 08 | 05 | 15 | 02 | -13 | -01 | -07 | 02 | 00 | 03 | 06 | 03 | 05 | 03 | 13 | 02 | 17 | 09 | -05 | 02 | 04 | 14 | 02 | 09 | 04 | 09 | 00 | 00 | 01 | 09 |
| 66 | 07 | -01 | -03 | -05 | 05 | 01 | 06 | 04 | 02 | -03 | -06 | -04 | -04 | -02 | 06 | 03 | 02 | 01 | 14 | 11 | -03 | -01 | 07 | 00 | 02 | 00 | -07 | -12 | 08 | -04 | 01 | -09 | 00 | 13 | -06 | -06 | -03 | 03 | -08 | -10 | -03 | 07 | 00 | -01 | 05 | -01 | -02 | 04 | 04 | 07 | 05 | 06 | 05 | 05 | -03 | 03 | 01 | -08 | -06 | 00 |
| 67 | -04 | -05 | 02 | -04 | -03 | 19 | 17 | -07 | -21 | 02 | -03 | 03 | 01 | 03 | 06 | -01 | -10 | -01 | -07 | -07 | 11 | 03 | 00 | -04 | -02 | 00 | 04 | 04 | 13 | 15 | -01 | 09 | 11 | 01 | -02 | -06 | -05 | 01 | -09 | 06 | -05 | -02 | 06 | 01 | -07 | 07 | 03 | -04 | 00 | -07 | 02 | 13 | 03 | -10 | 01 | -04 | 02 | -04 | -06 | 05 |
| 68 | 08 | 06 | 08 | -05 | 09 | 01 | -01 | 00 | -03 | -03 | -07 | 12 | 02 | 03 | 06 | 06 | 01 | 02 | 08 | 13 | 03 | -04 | 05 | 02 | 03 | -05 | 00 | -09 | -01 | 02 | -01 | 08 | 00 | 06 | 06 | -08 | -05 | 11 | -01 | 01 | -01 | 01 | 10 | -07 | -02 | -07 | 08 | 12 | 09 | 04 | 02 | -07 | 22 | 01 | 04 | -05 | -13 | -13 | 03 | 01 |
| 69 | 44 | 17 | 28 | 37 | 22 | -12 | 01 | 34 | 26 | 08 | 29 | 16 | 27 | 28 | -05 | 16 | 16 | 31 | 23 | 26 | 08 | 37 | 34 | 21 | 27 | 31 | 30 | 14 | -01 | 06 | 06 | 01 | -03 | 08 | 21 | 16 | 18 | -05 | 15 | 14 | -04 | -08 | 09 | 04 | 04 | -13 | 03 | 29 | -08 | 12 | -02 | 09 | 16 | 14 | 11 | 08 | 17 | 11 | -06 | 06 |
| 70 | 01 | 10 | -03 | 11 | 09 | 17 | 00 | 05 | 12 | 03 | 01 | 24 | 04 | 09 | 17 | 02 | 05 | -01 | -10 | -04 | 12 | 11 | -03 | -05 | 03 | 12 | 05 | 07 | 10 | -02 | 01 | 05 | 02 | -13 | 01 | 16 | -02 | 06 | -03 | 05 | 08 | 00 | 04 | 05 | -03 | 02 | 05 | 10 | 03 | -03 | 03 | 08 | 08 | -08 | 02 | -10 | 13 | 16 | -07 | -11 |
| 71 | 12 | 10 | 11 | 16 | 11 | 14 | 11 | 02 | 09 | 01 | 01 | 06 | -07 | -02 | 09 | -03 | -09 | 15 | 12 | 07 | 06 | 16 | 06 | 19 | 12 | 04 | 05 | 14 | 01 | -03 | 00 | -02 | 01 | 15 | 00 | 00 | 07 | -13 | 15 | -02 | 09 | 18 | -03 | 07 | 00 | -10 | 15 | 12 | 14 | 01 | 17 | 05 | 06 | -08 | 01 | -07 | -10 | 01 | 02 | 05 |
| 72 | 13 | 04 | 08 | 02 | 08 | 04 | 00 | 07 | 01 | 02 | 09 | 04 | -02 | 13 | 02 | -05 | -03 | 13 | 12 | 10 | 05 | 05 | 01 | 11 | 04 | -04 | 03 | 09 | -04 | 01 | -04 | -01 | 04 | 17 | 03 | 10 | 01 | -03 | 08 | -12 | -05 | 10 | 03 | 06 | 01 | 01 | 14 | 11 | 08 | -05 | 20 | 13 | 07 | 03 | 07 | -04 | -20 | 07 | 05 | 05 |
| 73 | -14 | -10 | -11 | -15 | -10 | -01 | -09 | -11 | 07 | -11 | 07 | -09 | 08 | 07 | 15 | 10 | -12 | 00 | 04 | -03 | -08 | -02 | -01 | 07 | -05 | 04 | 05 | -04 | 11 | -02 | 12 | 11 | 16 | -01 | -09 | -01 | -03 | 06 | -10 | -01 | 08 | 01 | 05 | -01 | -10 | 07 | 02 | -19 | -01 | -13 | -07 | -01 | -02 | 05 | 08 | 12 | 06 | 00 | 02 | -10 |
| 74 | -02 | -09 | -08 | 02 | -09 | -23 | -50 | 00 | 18 | -10 | 05 | -02 | 07 | -05 | -05 | 04 | 01 | 09 | 04 | 04 | -01 | 07 | 04 | 06 | -04 | 01 | -03 | -14 | -01 | 07 | -08 | 05 | -12 | -05 | -11 | 02 | 08 | 04 | 05 | 02 | -06 | -05 | -10 | 03 | 02 | 05 | -11 | 02 | -11 | 16 | 01 | 09 | 00 | 09 | 05 | 01 | 08 | -09 | -12 | -17 |
| 75 | 08 | 00 | 02 | 06 | -12 | -32 | -30 | 23 | 45 | -43 | 32 | 11 | 33 | 29 | 09 | 14 | 04 | 17 | 09 | 16 | 05 | 30 | 26 | 25 | -04 | 18 | 16 | -02 | 08 | 11 | 10 | 15 | 03 | -01 | -07 | -03 | 14 | 17 | -05 | 01 | -07 | -10 | 03 | 01 | 05 | 01 | -12 | 04 | -23 | 18 | -01 | -09 | -11 | 18 | 12 | 04 | -02 | -03 | -03 | -25 |
| 76 | -07 | 09 | 09 | -01 | -14 | 11 | 19 | 04 | -13 | -03 | -10 | 15 | -12 | -12 | 00 | 02 | 01 | -01 | 00 | -16 | -02 | -08 | 02 | 08 | -07 | -12 | -01 | -04 | 04 | -06 | -07 | 18 | 05 | 09 | -09 | -10 | -07 | -06 | 03 | -12 | -22 | -02 | -02 | 09 | -05 | 10 | 06 | -01 | 09 | 11 | 10 | 12 | 02 | 01 | -12 | -08 | -12 | -22 | 08 | 01 |
| 77 | -08 | -13 | -07 | 06 | -06 | 00 | -01 | 01 | -04 | 01 | -04 | -02 | 07 | -01 | 03 | -02 | -05 | 06 | -07 | 02 | 18 | 19 | 11 | -06 | -01 | 08 | 14 | 04 | 06 | -04 | 05 | 14 | 07 | -11 | 07 | -09 | 13 | 03 | -03 | 05 | 00 | -02 | -02 | -03 | -15 | -13 | -13 | -05 | -01 | -06 | -01 | -05 | -01 | -01 | 00 | 00 | -05 | -01 | -09 | -04 |
| 78 | 12 | 10 | -02 | 03 | 12 | -01 | -01 | -03 | 04 | 01 | 12 | 08 | 10 | 03 | -04 | -02 | 01 | -01 | 17 | 15 | 01 | 05 | 14 | 06 | 07 | 09 | 12 | 05 | 14 | 09 | -04 | -05 | -12 | -05 | -01 | 09 | 17 | -08 | 08 | 07 | 05 | -12 | 11 | 04 | 06 | 06 | 01 | -06 | 01 | -12 | 09 | -03 | 03 | 07 | 13 | 01 | 00 | [illegible] | 07 | 09 |
| 79 | 16 | 05 | 06 | 01 | -06 | -11 | 02 | 09 | -03 | -01 | -01 | -10 | 01 | 07 | 13 | -08 | 00 | 11 | 17 | 12 | -15 | 15 | 12 | 05 | 07 | 18 | 01 | 12 | 04 | 13 | -15 | -01 | -03 | 01 | -07 | -13 | 13 | -01 | 15 | 13 | -04 | -12 | 09 | 02 | 04 | 01 | 03 | -04 | -03 | 10 | -10 | -10 | 10 | 03 | 01 | -08 | -05 | -03 | -04 | 04 |
| 80 | 16 | 03 | 02 | 03 | -05 | -02 | 02 | 18 | 09 | -11 | 02 | -01 | 06 | 02 | 10 | 00 | 15 | 15 | 16 | 12 | 00 | 06 | 17 | 03 | 13 | 12 | -04 | 08 | 06 | 14 | -07 | -04 | 01 | -03 | 01 | 05 | 06 | 07 | 12 | -03 | -08 | -04 | 04 | -03 | 09 | -04 | 03 | 02 | -04 | 10 | -06 | 05 | 12 | 04 | 05 | -09 | 06 | 02 | -09 | -04 |

| Variable | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | — |||||||||||||||||||
| 62 | 05 | — ||||||||||||||||||
| 63 | -03 | 02 | — |||||||||||||||||
| 64 | 12 | 01 | 26 | — ||||||||||||||||
| 65 | -08 | 00 | -03 | 06 | — |||||||||||||||
| 66 | -06 | -03 | 01 | 04 | 09 | — ||||||||||||||
| 67 | 03 | -02 | 01 | 06 | 37 | 00 | — |||||||||||||
| 68 | -05 | -01 | -06 | 17 | 02 | 07 | 12 | — ||||||||||||
| 69 | 11 | -04 | 09 | 24 | 13 | 04 | 01 | 05 | — |||||||||||
| 70 | -01 | -01 | -03 | -05 | -09 | -05 | -02 | -10 | 07 | — ||||||||||
| 71 | 12 | -03 | -03 | 05 | 02 | 01 | -05 | 03 | 08 | 09 | — |||||||||
| 72 | -02 | -06 | -09 | 03 | -02 | -01 | -05 | 11 | 04 | 05 | 38 | — ||||||||
| 73 | 06 | 01 | -10 | -04 | 07 | 04 | 12 | -09 | -14 | -05 | 05 | -09 | — |||||||
| 74 | 14 | 14 | -05 | 01 | -18 | -16 | -16 | -08 | 00 | -03 | 00 | 01 | 04 | — ||||||
| 75 | 19 | 03 | 01 | -03 | -07 | -10 | -09 | 00 | 17 | -05 | -01 | -01 | 16 | 41 | — |||||
| 76 | -05 | -03 | 03 | -10 | 07 | 03 | 07 | -01 | -08 | -14 | 05 | 00 | -07 | -02 | 00 | — ||||
| 77 | -03 | -09 | -02 | 11 | -07 | -08 | 09 | 04 | 06 | 00 | 05 | -01 | 01 | 00 | 04 | -10 | — |||
| 78 | -02 | 00 | 05 | 03 | 00 | 00 | 00 | 03 | -03 | -03 | -13 | -02 | -08 | -07 | 00 | -17 | 00 | — ||
| 79 | -06 | 06 | 07 | -14 | 05 | 11 | -01 | -01 | 10 | -07 | 08 | 04 | -06 | -13 | 09 | -07 | 00 | 16 | — |
| 80 | -01 | 02 | 07 | -01 | 06 | 11 | -01 | 08 | 14 | 07 | 02 | 14 | -07 | -02 | 08 | -08 | 01 | 08 | 57 | — |

# Table VIII

## Eigenvalues and Cumulative Proportion of Variance Accounted for For Urban Specialist Unrotated Factors

| Factor | Eigenvalue | Cumulative Proportion Of Variance |
|---|---|---|
| A | 6.59 | .12 |
| F | 3.74 | .18 |
| U | 3.10 | .24 |
| P | 2.85 | .29 |
| K | 2.74 | .34 |
| B | 2.30 | .38 |
| CC | 2.27 | .42 |
| V | 2.13 | .46 |
| X | 2.09 | .49 |
| C | 1.98 | .53 |
| D | 1.93 | .56 |
| W | 1.85 | .59 |
| M | 1.78 | .63 |
| BB | 1.69 | .66 |
| N | 1.59 | .68 |
| Q | 1.58 | .71 |
| E | 1.55 | .74 |
| R | 1.48 | .77 |
| I | 1.41 | .79 |
| AA | 1.37 | .82 |
| T | 1.31 | .84 |
| J | 1.29 | .86 |
| Z | 1.20 | .88 |
| S | 1.19 | .90 |
| O | 1.15 | .92 |
| Y | 1.11 | .94 |
| G | 1.10 | .96 |
| L | 1.06 | .98 |
| H | 1.04 | 1.00 |

# Table IX

## Unrotated Factor Matrix and Communalities for Urban Specialist Sample

| Variables | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC | h$^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 63 | -05 | -01 | 00 | -07 | -14 | -09 | -02 | -02 | 01 | -31 | 00 | 03 | -04 | 04 | 24 | 00 | 08 | -06 | 10 | 06 | 05 | 07 | 10 | -18 | -04 | -02 | -07 | 07 | 68 |
| 2 | 37 | -04 | 06 | 07 | -20 | -29 | 00 | -08 | -05 | 21 | -10 | -02 | 25 | -04 | 12 | 40 | -14 | 20 | -15 | 18 | -19 | -07 | 00 | -04 | 08 | 02 | -01 | 06 | -02 | 74 |
| 3 | 29 | 09 | -15 | 04 | -12 | -22 | 11 | -07 | -18 | -07 | -03 | -05 | 06 | 19 | -09 | 50 | -11 | -17 | -06 | -05 | 05 | -16 | -10 | -24 | 01 | -11 | 04 | 07 | 00 | 69 |
| 4 | 53 | 02 | 13 | -08 | -07 | -08 | -05 | 09 | -22 | 14 | -36 | 03 | 10 | 07 | -03 | 14 | 09 | -06 | -03 | 13 | -09 | 15 | 06 | 12 | -05 | -09 | -05 | 04 | 28 | 74 |
| 5 | 27 | -12 | 03 | -02 | 09 | -28 | -06 | -05 | 00 | 20 | -30 | 08 | 08 | 25 | -15 | 25 | 06 | 04 | 13 | -15 | -20 | 15 | -02 | 23 | 01 | 06 | 12 | -15 | 25 | 74 |
| 6 | -17 | 17 | 11 | -07 | -17 | -56 | -09 | 23 | -04 | 02 | 24 | -01 | -02 | -24 | -07 | -06 | 02 | -07 | -09 | -02 | -11 | 07 | -04 | 16 | 06 | 15 | 01 | 07 | 00 | 69 |
| 7 | -04 | 35 | -14 | -05 | -04 | -58 | -05 | 01 | 10 | -10 | 08 | -04 | -06 | -16 | -02 | -02 | -16 | -20 | -15 | 14 | -24 | 17 | -01 | 18 | 13 | 03 | -06 | 03 | -08 | 81 |
| 8 | 44 | 01 | -13 | 02 | 06 | -12 | -19 | 00 | 19 | -12 | 19 | 06 | 19 | -22 | 03 | 10 | 08 | -19 | -04 | 09 | -36 | -14 | -01 | 27 | 10 | -06 | 00 | 04 | -19 | 77 |
| 9 | 44 | -23 | 09 | 00 | -06 | 31 | -02 | -08 | -18 | 03 | -07 | -11 | 12 | 02 | -03 | 26 | 01 | 05 | 07 | 06 | -31 | 01 | 08 | 11 | 08 | -01 | 06 | -21 | 13 | 69 |
| 10 | -01 | -03 | -03 | 01 | -03 | -39 | -15 | -16 | -18 | -06 | -33 | -27 | -04 | 04 | 15 | -35 | 04 | 13 | 03 | -06 | -08 | 14 | -18 | 08 | 09 | 07 | 09 | 05 | 15 | 70 |
| 11 | 53 | 00 | -10 | -15 | -13 | 25 | 08 | -16 | -13 | 03 | 01 | 02 | -11 | -10 | 13 | -01 | 01 | -02 | -08 | -06 | -13 | 16 | 11 | 06 | 25 | 04 | -05 | -17 | 22 | 70 |
| 12 | 21 | 02 | 10 | 08 | -21 | -07 | 05 | 19 | 01 | -06 | 30 | 14 | 04 | -13 | 00 | 20 | -02 | 13 | -04 | -03 | -40 | 05 | -42 | -03 | -07 | 14 | 05 | 08 | -15 | 73 |
| 13 | 34 | 17 | 02 | 11 | 15 | 22 | -16 | -08 | 03 | -06 | 35 | -03 | -11 | -04 | -09 | -01 | 03 | -14 | -08 | -15 | -10 | 28 | -25 | 07 | 00 | 09 | -06 | -19 | 09 | 67 |
| 14 | 47 | 15 | -10 | -08 | 17 | 02 | 01 | 11 | 03 | -05 | 24 | -02 | 18 | -09 | 10 | -01 | 11 | -08 | 04 | -13 | -28 | -06 | 03 | 21 | 05 | 04 | 02 | -27 | 03 | 65 |
| 15 | 06 | 19 | 40 | 08 | -06 | 05 | 01 | -07 | -10 | -13 | -19 | -05 | -07 | -09 | -05 | 04 | 03 | 25 | -18 | -16 | 15 | 19 | 24 | 20 | -11 | 11 | 03 | -01 | -02 | 61 |
| 16 | 35 | 09 | -19 | -08 | 01 | 12 | 06 | 24 | -10 | -12 | -01 | 03 | -05 | -10 | 23 | 07 | 25 | 08 | -11 | -09 | -15 | 10 | 32 | -01 | -14 | 06 | -06 | 12 | 28 | 69 |
| 17 | 34 | -23 | 02 | 15 | 09 | 04 | 10 | -09 | 10 | -06 | -01 | 21 | 15 | -10 | -10 | -16 | 20 | 19 | 05 | 04 | 06 | 07 | 09 | -02 | -05 | 15 | -27 | 33 | 05 | 65 |
| 18 | 56 | -11 | 07 | -07 | 07 | 00 | -03 | -03 | -03 | -13 | 02 | 02 | 02 | -11 | -06 | -06 | 02 | 13 | 08 | -03 | 13 | 02 | 07 | -22 | -21 | -20 | 12 | 18 | -13 | 62 |
| 19 | 42 | -16 | -15 | -11 | -08 | -05 | 16 | -03 | 05 | 07 | 02 | 10 | -14 | 01 | 11 | 17 | -08 | 04 | 09 | 06 | 37 | -06 | -08 | -12 | 13 | 18 | 15 | -13 | -22 | 67 |
| 20 | 43 | -32 | -12 | -13 | 12 | 03 | 08 | -08 | 00 | -11 | 06 | 19 | -15 | 03 | 00 | -01 | 00 | 05 | 03 | 03 | 37 | 06 | -08 | 23 | 13 | 00 | 10 | -18 | -05 | 68 |
| 21 | 07 | -21 | 32 | -16 | -16 | -06 | 07 | -06 | 01 | 02 | 30 | -21 | -29 | 11 | -15 | 09 | 07 | -17 | -02 | 20 | 13 | 17 | -20 | 10 | 04 | -17 | -22 | 00 | 17 | 76 |
| 22 | 58 | -09 | 08 | -22 | -04 | 19 | 07 | 00 | -14 | 19 | 11 | 06 | 02 | 01 | -09 | -25 | 06 | 03 | -02 | 01 | -10 | 03 | 10 | 11 | -05 | 03 | 07 | 21 | -05 | 68 |
| 23 | 52 | -02 | -11 | 04 | -10 | 19 | 02 | 13 | 12 | 21 | -13 | -14 | -35 | -18 | -01 | -05 | -13 | 12 | 05 | 05 | -06 | 23 | 08 | -13 | 07 | -03 | -20 | 13 | -16 | 81 |
| 24 | 33 | -01 | 09 | 00 | 02 | 14 | -05 | 17 | 12 | 14 | -21 | -23 | -36 | -23 | -12 | 03 | -21 | -01 | 03 | -04 | -16 | 31 | 01 | -24 | -05 | -09 | -06 | 02 | -14 | 76 |
| 25 | 30 | -12 | -02 | 06 | -15 | 00 | -16 | 11 | 20 | 01 | -21 | 19 | -03 | 09 | -04 | -30 | 05 | 06 | 08 | -06 | -05 | 13 | 15 | -10 | 22 | 17 | 03 | 32 | -13 | 66 |
| 26 | 59 | 22 | 05 | 10 | 19 | 03 | 08 | -09 | -10 | 07 | 19 | 05 | 05 | 09 | -05 | -40 | -11 | -09 | 09 | 13 | 05 | -01 | 02 | 07 | -13 | 12 | -08 | 04 | 02 | 77 |
| 27 | 46 | 27 | 08 | -04 | 23 | -07 | -04 | -17 | 03 | 06 | 22 | -19 | 13 | 12 | 00 | -28 | -09 | -08 | -05 | -01 | -07 | -05 | -02 | -04 | -06 | 16 | -17 | 07 | 11 | 68 |
| 28 | 31 | 03 | 06 | -03 | 06 | -20 | -01 | -10 | -16 | -01 | 10 | 21 | 15 | -08 | 05 | -44 | -09 | -17 | 10 | -17 | 06 | -02 | 15 | -06 | 13 | -03 | -10 | -01 | -14 | 61 |
| 29 | 16 | 14 | 18 | 11 | 07 | -05 | 12 | -07 | 20 | 11 | 21 | 02 | 15 | -23 | 30 | -04 | 33 | 03 | -04 | 26 | 17 | 20 | -06 | 07 | -15 | -07 | 32 | -18 | 02 | 80 |
| 30 | 13 | -10 | -01 | -18 | -36 | 01 | -19 | -09 | -15 | 05 | 30 | 00 | 09 | -05 | -08 | -08 | 22 | 02 | -17 | -28 | 28 | -18 | 04 | -04 | -06 | -03 | -08 | 01 | -20 | 70 |
| 31 | 07 | 02 | -09 | 10 | 12 | 03 | -08 | 12 | 18 | -23 | 19 | 07 | 11 | 09 | -10 | 13 | -20 | -10 | 18 | 25 | -08 | 10 | 22 | -26 | -14 | -04 | -13 | 02 | 36 | 68 |
| 32 | 05 | 13 | 19 | -37 | -05 | 15 | 07 | -04 | 13 | -11 | 12 | -10 | 35 | 08 | 02 | 19 | -02 | 36 | 09 | 17 | 07 | 06 | 00 | -11 | 13 | -14 | -09 | 08 | -03 | 68 |
| 33 | 03 | 17 | -02 | -12 | 03 | -06 | 32 | -09 | -14 | 06 | 33 | -09 | 09 | 11 | -01 | 09 | -12 | 12 | 02 | -09 | -02 | 13 | 22 | -24 | 25 | -05 | 24 | 24 | -04 | 66 |
| 34 | 09 | -17 | 08 | -05 | -01 | -22 | -21 | -16 | -02 | -31 | -04 | -07 | 05 | 01 | -12 | 24 | 29 | -06 | -33 | 13 | 06 | 11 | 05 | -38 | -08 | 09 | 04 | -01 | -12 | 75 |
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| 41 | 08 | -22 | -03 | -03 | -20 | -22 | -19 | 16 | -01 | 08 | 19 | -11 | 18 | -05 | -19 | -06 | -19 | 07 | -06 | 03 | 04 | -36 | 23 | -06 | -17 | -01 | 12 | 00 | 29 | 70 |
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| 57 | 18 | 32 | 02 | 45 | -03 | 04 | 00 | -03 | 02 | 02 | 03 | 00 | -22 | 06 | -17 | -01 | 04 | 07 | -13 | 06 | 21 | -19 | 03 | 02 | 15 | 07 | 12 | 23 | 30 | 72 |
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| 60 | 19 | -17 | -05 | -10 | 19 | -43 | 09 | -01 | -07 | 01 | 07 | 05 | 04 | -11 | -01 | -15 | 07 | -02 | 06 | -09 | 39 | 23 | -05 | -07 | -07 | -18 | -03 | -07 | 14 | 65 |
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| 62 | -09 | -05 | 12 | 10 | -05 | 17 | 02 | 25 | 01 | 12 | -02 | 06 | 20 | 13 | 17 | 06 | 16 | -40 | 10 | 06 | 29 | 21 | 08 | 00 | 04 | 05 | -19 | 12 | 07 | 63 |
| 63 | 14 | -17 | -24 | -07 | 03 | -13 | 08 | 14 | -08 | 13 | 18 | -21 | 22 | -32 | -15 | 04 | 02 | -18 | 27 | -10 | 23 | 02 | -17 | 10 | -06 | -08 | 21 | 10 | -06 | 71 |
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| 65 | 06 | 34 | -28 | -12 | -19 | -21 | -12 | -06 | -03 | 10 | 20 | 19 | -18 | 12 | 08 | 16 | 14 | -03 | 22 | 07 | 06 | 04 | 17 | -16 | -03 | -26 | 02 | -16 | -01 | 70 |
| 66 | 01 | -02 | -21 | 04 | 06 | -10 | 16 | -16 | 14 | 00 | -01 | -03 | -21 | 04 | -22 | 14 | 23 | 08 | 09 | 24 | 06 | 05 | 25 | 12 | -23 | 39 | 09 | -05 | -15 | 69 |
| 67 | -06 | 35 | -04 | -24 | -27 | -17 | -23 | -07 | 09 | 16 | 27 | 04 | -13 | 18 | 06 | -05 | 20 | 07 | 16 | -07 | 06 | 22 | -02 | -05 | -10 | -16 | 00 | 01 | -02 | 69 |
| 68 | 06 | -13 | -05 | -10 | 20 | -13 | -14 | 23 | 17 | 00 | 12 | -06 | -12 | 35 | 28 | 19 | 01 | 28 | -09 | -18 | 02 | 09 | -08 | 07 | -27 | 11 | -14 | 08 | -20 | 75 |
| 69 | 65 | 00 | -12 | -01 | -04 | -02 | -18 | -13 | 02 | -10 | -06 | 03 | -10 | 19 | -11 | 03 | 07 | -11 | 11 | 04 | -10 | 05 | -10 | 09 | 05 | -09 | 04 | 18 | -03 | 67 |
| 70 | 10 | 05 | 44 | 26 | -34 | -07 | 25 | 12 | -02 | -12 | 10 | 04 | 09 | 00 | -06 | -07 | 03 | 08 | 22 | -06 | -19 | -02 | -03 | 22 | 01 | 03 | 08 | 03 | 16 | 70 |
| 71 | 19 | -08 | 46 | -27 | 02 | -24 | -02 | 16 | -05 | -05 | -11 | 06 | -17 | 01 | 00 | 07 | -20 | -21 | 07 | 02 | -08 | -02 | 21 | -09 | -05 | 15 | 24 | 01 | -19 | 73 |
| 72 | 15 | -18 | 33 | -17 | 09 | -20 | 17 | -02 | 09 | -26 | -06 | -03 | -13 | 09 | 09 | 09 | -01 | -15 | 06 | -29 | -10 | -05 | 13 | -12 | 04 | 01 | -03 | -25 | -27 | 69 |
| 73 | -07 | 16 | 05 | -06 | 06 | 22 | -18 | 08 | 02 | 04 | 27 | -13 | -04 | -01 | 02 | -05 | -06 | 16 | 14 | 11 | 01 | 12 | 29 | -26 | 12 | 23 | 36 | -23 | 14 | 72 |
| 74 | 06 | -12 | 28 | 02 | 16 | 51 | -20 | 13 | -04 | 11 | -11 | -01 | -03 | -03 | 09 | 11 | 19 | -04 | 04 | -09 | 08 | -31 | -15 | -07 | 11 | -02 | 05 | 00 | 04 | 68 |
| 75 | 35 | 03 | 12 | -06 | 15 | 65 | -14 | 02 | -03 | 07 | 22 | -03 | 07 | -14 | -03 | 22 | -02 | -08 | -08 | 02 | -07 | -05 | 04 | -03 | 02 | -08 | -03 | -13 | -14 | 81 |
| 76 | -13 | 25 | 08 | -23 | 20 | -14 | 08 | -01 | -07 | 07 | -07 | 03 | 02 | -35 | -02 | 23 | 23 | 07 | 06 | 16 | -06 | 07 | -09 | -20 | 14 | 03 | -23 | 20 | -25 | 72 |
| 77 | 01 | 01 | 18 | -28 | 06 | 11 | 10 | 05 | 29 | -05 | 18 | -05 | 09 | 39 | 04 | -18 | -08 | -14 | -23 | 16 | 00 | 12 | -08 | 17 | 00 | -20 | 12 | 23 | 06 | 67 |
| 78 | 18 | -07 | -14 | 14 | -23 | -04 | 13 | 01 | 29 | 33 | -03 | -01 | 17 | 08 | 00 | -11 | -14 | 08 | -19 | -09 | 16 | 15 | -14 | 03 | -04 | 09 | -16 | -38 | -01 | 70 |
| 79 | 19 | 09 | -09 | 18 | -07 | 01 | -03 | 09 | -12 | -02 | -09 | -10 | 16 | 10 | -12 | -06 | -10 | -02 | -06 | 03 | 29 | 13 | 27 | 25 | -01 | -09 | 06 | -16 | -55 | 78 |
| 80 | 24 | 00 | -02 | 29 | -17 | 02 | 04 | 13 | 03 | -12 | 00 | -18 | 00 | 13 | -06 | 00 | 09 | -08 | 07 | 02 | 17 | 04 | 26 | 25 | 04 | -07 | -01 | -05 | -51 | 70 |

Note: Decimals have been omitted

# Table X

### Rotated Factor Matrix and Communalities for Urban Specialist Sample

| Variables | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC | $h_2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60 | 21 | 03 | 26 | -05 | 05 | -10 | -01 | -01 | -04 | -07 | 07 | -21 | -03 | 08 | -08 | -05 | 00 | -15 | 15 | 03 | -15 | -01 | -01 | -01 | 05 | -13 | -06 | -15 | 68 |
| 2 | 50 | -08 | -12 | 28 | -15 | -16 | -14 | 17 | 03 | 14 | -03 | 01 | -09 | -15 | 00 | 05 | 06 | 35 | -12 | 03 | -08 | -13 | -20 | 05 | 06 | -03 | -07 | -16 | 00 | 74 |
| 3 | 27 | -07 | -09 | 42 | 05 | -03 | 05 | 12 | 26 | -06 | 01 | -19 | 04 | 02 | -06 | 01 | -10 | 13 | -22 | -24 | 14 | -13 | -25 | -08 | -14 | -04 | -17 | 03 | -09 | 69 |
| 4 | 76 | 12 | -01 | 08 | -02 | 01 | -01 | 00 | -02 | -13 | 05 | 08 | -16 | 07 | -08 | -15 | -03 | 01 | -03 | 09 | -03 | 12 | 01 | 01 | -01 | -10 | -13 | 09 | -01 | 74 |
| 5 | 74 | 04 | 02 | -12 | 06 | -06 | 01 | -09 | 15 | 08 | 03 | -03 | 11 | 00 | 11 | 03 | -01 | -13 | 10 | -10 | 08 | -04 | 02 | -13 | -02 | 13 | 01 | -11 | 11 | 74 |
| 6 | -07 | -06 | 18 | -05 | -21 | -70 | -09 | 14 | -06 | 01 | 10 | -02 | 04 | 05 | 01 | 07 | 13 | -05 | 02 | 10 | 08 | 07 | -07 | -06 | -06 | -05 | -02 | 07 | 07 | 69 |
| 7 | -02 | 10 | -11 | 03 | 05 | -83 | -22 | 01 | 01 | 06 | 05 | -10 | -05 | 01 | -05 | -07 | -04 | -03 | -03 | -03 | -05 | -07 | 01 | -02 | -10 | 03 | -02 | 02 | -03 | 81 |
| 8 | 14 | 02 | -16 | 00 | -08 | -17 | -76 | 03 | 10 | 04 | -10 | 11 | -01 | -02 | -01 | -13 | -03 | 02 | -06 | 03 | 09 | -11 | -09 | 00 | 02 | 00 | -13 | 07 | -12 | 77 |
| 9 | 55 | -16 | 01 | -03 | -01 | 35 | -31 | -02 | -07 | -13 | -09 | -06 | -10 | 04 | -14 | -02 | -02 | 10 | 00 | -07 | -04 | -08 | -13 | -05 | 16 | 02 | 15 | -04 | -06 | 69 |
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| 12 | 03 | -25 | 06 | -10 | 07 | -20 | -29 | 28 | -03 | -15 | -04 | 07 | -10 | 03 | 10 | 06 | 02 | 11 | -02 | 11 | 03 | -17 | -56 | -01 | 05 | -06 | -16 | -07 | 10 | 73 |
| 13 | 01 | -13 | 23 | -08 | 29 | 04 | -36 | -01 | 09 | -08 | 03 | -09 | -15 | 25 | 05 | -36 | -08 | -22 | -07 | 07 | 01 | -05 | -15 | 08 | -04 | -06 | 13 | -13 | 05 | 67 |
| 14 | 18 | -03 | 03 | -03 | 02 | -02 | -58 | 04 | 10 | -27 | -06 | -07 | 04 | -08 | 06 | -31 | -01 | 00 | 14 | 11 | 09 | -04 | 01 | -14 | -03 | -03 | 07 | -07 | -05 | 65 |
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| 25 | 07 | 13 | -06 | -08 | -03 | -04 | 02 | 00 | 12 | -01 | -09 | 71 | -19 | -07 | 03 | -07 | 05 | 04 | 00 | -10 | -08 | 09 | -09 | -03 | -01 | -02 | 07 | 01 | -10 | 66 |
| 26 | 08 | 06 | -03 | 06 | 00 | 05 | -07 | 15 | -07 | -08 | 01 | 15 | -06 | 04 | -08 | -78 | -10 | -06 | 12 | 14 | 04 | -05 | -05 | 04 | 01 | 04 | -02 | -03 | -14 | 77 |
| 27 | 06 | 06 | 02 | -05 | -05 | -08 | -13 | 09 | 08 | -01 | -08 | -02 | -04 | 05 | 09 | -77 | -03 | 08 | -02 | -03 | -03 | 02 | -02 | 01 | 02 | -02 | 04 | -02 | 07 | 68 |
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| 29 | 02 | -01 | -05 | 02 | 10 | -01 | -14 | 04 | 01 | 10 | -16 | -06 | 08 | 03 | -02 | -08 | 05 | 07 | -05 | 80 | 11 | 08 | 00 | 06 | -10 | 09 | 12 | -10 | -02 | 80 |
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| 32 | 02 | 11 | 12 | -08 | 03 | 13 | -03 | -03 | -02 | 01 | 02 | -01 | 04 | 10 | 07 | 01 | -10 | 76 | -04 | 05 | -03 | -01 | -01 | 01 | -07 | -07 | 05 | 02 | 02 | 68 |
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| 35 | 07 | -14 | -20 | -22 | 01 | -15 | -04 | 02 | 13 | -42 | -28 | 19 | -09 | -01 | 10 | -23 | 19 | 01 | -16 | -18 | 06 | -12 | 02 | 01 | 16 | -11 | -05 | -04 | 07 | 63 |
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| 37 | -04 | 54 | 06 | 26 | -08 | 10 | -12 | 09 | -04 | -21 | -02 | 21 | 11 | 18 | -08 | -12 | 02 | 13 | -10 | 05 | -03 | 05 | -12 | 00 | 11 | -04 | -05 | -15 | -15 | 73 |
| 38 | -19 | -76 | -06 | 17 | -04 | 13 | -06 | 12 | 05 | -01 | 03 | 00 | 06 | 11 | 10 | 00 | 00 | -04 | -06 | 09 | -05 | 02 | -10 | 12 | -02 | -03 | 00 | 06 | -09 | 76 |
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| 40 | 00 | 38 | 13 | 15 | 00 | 04 | 17 | -01 | 22 | -13 | 04 | 19 | -12 | -01 | 11 | -15 | 09 | 02 | 18 | 27 | 03 | -14 | -03 | 12 | -11 | -31 | -05 | -06 | -05 | 63 |
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| 42 | -12 | -03 | -11 | -09 | -59 | -10 | -13 | -13 | -03 | 10 | -01 | 04 | 03 | 05 | -01 | -09 | 02 | -09 | 10 | -03 | -09 | -05 | 24 | -22 | -04 | 15 | 02 | 09 | 17 | 65 |
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| 44 | 15 | 13 | 16 | -11 | 25 | -01 | 25 | 05 | 31 | -16 | 14 | -09 | -07 | 06 | -19 | -08 | -11 | -22 | -19 | 27 | 07 | 12 | -14 | -15 | -01 | -02 | -18 | -05 | 04 | 67 |
| 45 | 09 | -05 | 12 | 82 | -13 | 00 | 01 | 02 | 02 | -02 | -03 | -09 | -01 | 00 | 01 | -06 | -10 | -06 | -05 | 02 | 07 | 14 | 05 | 02 | 02 | -02 | -10 | 00 | -04 | 78 |
| 46 | -03 | 16 | 76 | 08 | 01 | 06 | 06 | 04 | -02 | 06 | -02 | 01 | 05 | 00 | -07 | 03 | -05 | 10 | -03 | -06 | 12 | 06 | 09 | 05 | -05 | -05 | 07 | -01 | 06 | 70 |
| 47 | 06 | -08 | 05 | 22 | 05 | -17 | 05 | 63 | 03 | 03 | -01 | -13 | -05 | -08 | 03 | -15 | -05 | -07 | 03 | 11 | -05 | -29 | 09 | -16 | -08 | -12 | 02 | -06 | 03 | 70 |
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| 52 | 02 | 04 | -02 | -05 | 00 | 02 | -02 | 23 | 23 | -24 | -27 | 05 | 09 | -09 | -13 | 01 | 22 | -03 | -07 | -11 | -31 | 27 | -05 | -22 | -31 | 19 | -13 | 07 | 06 | 72 |
| 53 | 21 | 00 | -02 | -02 | -06 | -03 | -08 | 66 | 04 | 07 | -11 | 05 | 17 | 02 | 25 | -19 | 05 | 07 | -05 | -02 | 20 | 11 | 11 | 00 | 00 | 08 | 05 | 01 | -11 | 74 |
| 54 | 06 | -03 | -06 | 04 | 00 | 11 | -20 | -03 | 78 | 08 | -03 | 07 | -07 | -12 | 00 | 04 | -09 | 04 | -10 | 00 | 05 | -04 | 06 | 03 | 02 | -02 | 05 | -07 | -02 | 74 |
| 55 | -19 | -06 | 05 | 10 | 00 | 16 | -07 | 43 | -12 | -06 | 04 | 16 | -17 | 19 | -07 | -24 | -10 | -03 | -06 | -07 | 15 | -21 | -08 | -01 | -04 | -07 | 03 | -24 | -05 | 60 |
| 56 | 02 | 10 | -06 | 02 | 01 | 06 | -03 | 02 | -11 | -79 | 02 | -03 | -02 | -01 | -04 | -02 | -07 | -01 | -01 | -10 | 04 | -03 | 03 | 06 | -04 | 03 | 11 | -03 | 09 | 71 |
| 57 | 02 | -02 | 15 | 31 | -05 | -01 | 15 | 16 | 42 | 01 | -04 | 11 | 00 | 15 | -15 | -17 | 00 | -17 | 14 | 09 | -21 | -11 | -07 | 36 | 03 | 07 | 05 | 17 | -05 | 72 |
| 58 | 06 | -12 | -22 | -16 | -13 | 04 | 09 | 07 | -14 | -06 | -41 | 14 | -10 | -05 | -24 | -25 | -09 | -17 | -14 | 10 | -22 | 02 | 11 | -10 | -05 | -23 | 01 | -18 | -06 | 70 |
| 59 | -16 | -18 | -21 | -23 | -07 | -02 | 09 | 26 | -16 | -04 | 01 | 06 | -07 | -41 | -08 | -15 | -05 | 02 | -36 | -03 | 15 | 07 | -16 | -05 | 01 | -09 | -06 | -23 | 09 | 73 |
| 60 | 09 | 04 | 11 | 13 | 05 | -14 | 17 | 09 | -05 | -01 | 00 | 10 | 04 | 07 | 03 | -15 | -08 | -07 | -15 | 21 | 47 | -05 | 37 | -13 | -11 | -11 | -09 | -15 | 07 | 65 |
| 61 | 07 | 04 | -11 | 10 | 10 | 15 | -02 | -21 | -04 | 15 | -04 | 03 | -03 | -07 | -01 | -13 | 00 | -05 | -03 | -03 | 00 | 06 | -75 | -05 | -04 | -03 | 13 | -02 | 13 | 77 |
| 62 | 00 | -04 | 02 | 17 | 11 | 12 | 04 | -07 | -05 | 06 | 10 | 11 | 07 | 10 | 01 | 05 | -16 | -04 | 07 | 09 | 04 | 68 | -01 | 01 | -01 | -10 | -06 | 00 | -10 | 63 |
| 63 | 00 | -02 | 04 | 06 | -10 | -05 | -11 | 03 | 03 | -02 | -06 | -06 | -03 | -01 | -07 | 00 | 06 | 01 | 06 | 02 | 79 | 07 | -03 | 08 | 03 | 02 | -03 | 02 | -10 | 71 |
| 64 | -04 | 04 | 02 | 42 | -10 | 02 | 00 | 01 | 15 | 00 | -05 | 13 | 01 | 40 | 23 | -18 | 08 | -11 | -03 | -02 | 39 | -03 | -10 | -04 | -04 | 11 | 06 | -04 | 20 | 72 |
| 65 | 04 | -03 | -05 | 14 | 01 | -08 | -04 | 06 | 02 | -07 | 03 | -07 | 00 | -06 | -06 | 04 | -12 | 02 | 00 | 03 | 01 | -07 | 06 | 00 | -78 | 05 | 04 | 01 | -05 | 70 |
| 66 | 03 | -02 | -02 | 03 | -01 | -07 | 05 | -03 | 00 | -02 | 04 | 05 | 00 | -02 | 05 | 01 | -04 | -07 | -08 | 07 | 01 | -06 | 04 | 01 | -03 | 79 | 05 | 00 | -14 | 69 |
| 67 | -04 | -01 | 11 | -15 | 00 | -18 | 06 | -03 | -04 | 05 | -01 | 00 | 00 | 13 | 16 | -06 | 08 | 09 | 00 | 07 | -01 | 06 | -06 | 07 | -73 | -03 | 07 | -01 | 03 | 69 |
| 68 | 01 | -07 | -05 | 02 | 03 | 02 | -01 | 11 | -04 | -01 | 08 | 03 | -04 | 03 | 83 | 02 | 00 | 03 | -04 | -01 | -03 | -05 | 00 | -09 | -06 | 04 | -05 | -06 | -03 | 75 |
| 69 | 38 | 11 | -11 | 06 | 13 | 07 | -23 | 04 | 10 | -05 | -14 | 28 | -13 | 22 | 02 | -27 | -02 | -07 | -11 | -15 | 10 | -16 | -14 | 05 | -18 | 02 | -07 | 13 | -15 | 67 |
| 70 | 18 | -21 | 26 | -13 | -09 | -14 | 05 | 13 | -03 | -05 | -28 | 11 | 13 | 15 | -17 | 00 | -04 | 06 | 36 | 19 | -12 | 00 | -26 | -13 | 13 | -07 | -10 | 05 | -13 | 70 |
| 71 | 15 | 14 | -08 | 03 | -20 | -12 | 06 | 09 | -10 | 08 | 14 | 08 | -16 | 06 | -01 | -02 | -01 | -02 | -05 | 08 | 00 | 00 | -21 | -64 | 05 | 00 | 13 | 24 | -05 | 73 |
| 72 | 01 | -01 | 03 | 03 | 07 | 02 | -06 | 03 | 01 | 02 | -14 | -02 | -02 | 04 | 08 | 01 | 04 | 01 | -10 | -06 | -04 | -07 | 05 | -78 | 04 | -01 | -04 | -02 | -08 | 69 |
| 73 | -13 | -04 | 13 | -10 | -11 | 10 | 01 | 07 | 05 | -11 | 05 | -05 | -07 | -08 | -05 | -04 | -15 | 09 | 02 | 14 | -07 | 04 | -05 | -01 | -12 | 09 | 73 | 04 | 05 | 72 |
| 74 | -02 | 08 | 11 | 03 | -02 | 62 | -16 | 13 | 09 | 04 | 02 | -02 | -06 | 04 | 01 | 09 | 20 | -06 | 05 | 04 | -06 | 19 | -08 | 00 | 16 | -16 | 04 | 21 | 14 | 68 |
| 75 | 00 | -08 | 07 | 00 | 02 | 55 | -47 | -09 | 06 | -03 | 20 | -14 | -28 | 06 | -06 | -16 | -04 | 12 | -05 | 07 | -04 | 03 | -16 | 01 | 07 | -09 | 11 | 03 | -10 | 81 |
| 76 | -12 | 03 | 08 | 02 | 23 | -20 | -11 | 13 | -02 | 09 | 19 | -04 | -23 | -21 | -09 | 09 | 14 | 37 | -16 | 07 | 04 | 12 | 08 | -04 | -06 | 15 | -23 | 27 | 24 | 72 |
| 77 | -05 | 09 | -35 | -20 | -03 | -02 | 06 | -15 | 09 | -02 | 10 | 02 | 15 | 49 | 16 | -21 | -06 | 20 | 04 | 12 | -04 | 10 | -04 | -02 | 04 | -19 | 02 | 04 | -04 | 67 |
| 78 | 07 | 10 | 05 | 05 | -01 | -03 | 01 | 02 | 05 | 01 | -05 | -02 | -10 | -01 | 06 | -06 | 06 | -03 | 07 | 07 | 01 | 07 | -03 | 08 | 02 | 01 | -05 | -79 | -10 | 70 |
| 79 | 03 | 09 | -01 | 01 | 05 | -01 | -01 | 00 | -02 | 08 | 17 | 00 | -06 | -12 | -01 | -08 | 07 | 00 | -04 | 02 | 08 | 00 | 07 | -01 | -01 | 02 | 02 | -11 | -82 | 78 |
| 80 | -01 | -06 | 00 | 07 | 04 | 01 | -12 | 05 | 04 | 05 | -11 | 10 | -08 | 05 | 03 | 00 | 06 | -02 | 03 | 00 | 00 | 07 | 04 | -08 | -02 | 13 | -05 | 00 | -77 | 70 |

# Chapter IV

## An Investigation of the Criterion Problem For a Group of General Practitioners

During the last thirty years there has been a marked decrease in the number and a gradual decline in the status of the general practitioner. The "family doctor" who delivers the baby, sets the broken bone, removes the tonsils, and gives comfort when he can do no more is ceasing to exist in the experience of a large proportion of our population. In 1931, 84 per cent of the private practitioners were not certified in any of the medical specialties; today, less than 50 per cent of American physicians are general practitioners (Peterson, 1963). With the exception of the working-class families, who still secure most of their medical care from general practitioners, the American people are tending to seek in their own way the best modern medicine by employing specialists---internists, pediatricians, obstetricians, and others---each to treat a pain or problem the patient believes to be in the doctor's "field."

Despite this trend, it is felt that the general practitioner does and will continue to play a vital role in the practice of medicine. For example, about half of the surgery and 60 per cent of obstetrical stratment is now done by general practitioners (Anderson & Feldman, 1956). Moreover, the quality of medical care provided by these family doctors need not be inferior. Peterson et al. (1956) found that the better practitioners performed at a level that would have been acceptable in the outpatient clinic of a university hospital. Most important, though, is the function of ensuring that the "whole" patient is treated adequately. The general practitioner is in a unique position to provide continuity and discriminating guidance to the confusing multiplicity of specialist services that lie beyond the scope and judgment of the patient.

In the light of such considerations regarding the significance of the general practitioner, it certainly seems appropriate, as with the full-time College of Medicine faculty and the urban specialists, to investigate the dimensions and correlates of the performance, accomplishments and contributions of this large body of medical practitioners before attempting to develop predictors of such performance. Accordingly, the purpose of the present phase of the project is to provide some of this needed knowledge for medical general practitioners. In so doing, three samples were studied: a group of urban general practitioners, a group of rural general practitioners, and a combined sample comprising both the combined urban and rural general practitioner samples.

Combined Urban and Rural General Practitioner Sample:

Subjects: The population under consideration consisted of the 498 physicians practicing in the state of Utah who had not fulfilled the American Board requirements for certification as a specialist, and who, therefore, were classified as general practitioners. Letters signed by the Dean of the University of Utah College of Medicine were sent to these physicians inviting them to participate in this project. Such participation primarily involved an interview lasting approximately one hour. A second letter was sent to those physicians who did not respond to the first letter; physicians who did not respond to the second letter were dropped. Ultimately, there were 217 physicians who agreed to participate; this smaller group, therefore, was the sample actually studied in detail in this research.

Criterion Measures: Eighty scores relevant to physician performance, including three scores measuring performance in education, were obtained from a variety of sources. The first six of these scores included 1 score based on reputation among colleagues as indicated by peer nominations, 2 scores concerning intern and residency training, 1 score concerning publications, 1 score dealing with professional mobility, and 1 score based on listings in honorary compendiums, such as Who's Who in American Medicine. The next 64 scores were obtained during an interview with each participating physician: specifically, 1 score based on income, 2 scores having to do with memberships in professional societies, 1 score from a special questionnaire dealing with sources and degrees of occupational satisfaction, 57 scores based on answers to direct questions concerning a variety of aspects of each physician's practice, 3 scores dealing with the physician's image of success, and 1 score representing the physician's self-assessment of his own success. The final 10 scores included 3 ratings by the particular project researcher who conducted the interview, 4 control scores involving such variables as years of experience, and three scores measuring performance in medical education. The exact titles of the 80 variables and the sources from which they were obtained are listed in Table XI.[6] Details of the system by which raw scores were derived for each variable are presented in Appendix C.

Representativeness of the Sample Studied: The only criterion scores available for the non-participating physicians were the score concerning the age at which the M.D. degree was obtained, the score involving peer nominations, the score involving publications, and the score indicating the degree to which the physician specialized within his general practice. One these 4 scores, statistical tests were made comparing the physicians who did not participate with the physicians who did. Two of these differences were significant at the .05 level, indicating that non-participants had fewer publications and were nominated less frequently by their colleagues than participants. It would appear, therefore, that the participating physicians were not completely representative of Utah general practitioners. However, since the present study is concerned with the relationships between variables rather than with estimating typical level of performance on given variables, in the opinion of the authors the results of this study are not seriously biased by this lack of full representation. In any case, in a first study such as the present one the most important consideration is to go as far as you can with the data you can obtain. The question of generalization can best be answered through further studies. A careful examination of the next two sections of this chapter, dealing with the urban general practitioner sample and the rural general practitioners sample, sheds some light on the representativeness of the group studied in this section.

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[6] All tables for this sample are presented at the end of this chapter.

Results: Concerning the factor analysis of the data obtained for the 80 criterion measures (see Table XII at the end of the chapter for the intercorrelation matrix), a large number of factors, namely 30, had an eigenvalue greater than 1.00 (see Table XIII). The unrotated factor matrix and rotated factor matrix, together with the communalities, are presented in Tables XIV and XV, respectively. A description and analytical interpretation of each of the rotated factors is given in the following pages.

Factor A's highest loadings indicate a physician who has a large number of patients referred to him by other physicians, who tends to specialize within his general practice, and who has had longer and more varied internship and residency training. Secondary loadings show the high scoring physician to belong to prestigeful societies, rather unwillingly to provide special attention to his patients, and to be relatively active in research. The overall impression is of an efficient, busy physician who is functioning as both a general practitioner and medical specialist even though he has not completed the American Board specialty examination. Moreover, in view of the similarity of this factor pattern to Factor G in the urban specialist sample, it seems appropriate to also label it Level of Medical Specialization.

The highest single loading on Factor B is for the variable dealing with the extent to which the physician consults with other physicians, thus the title Medical Consulting. In agreement with this trend to rely on the opinion and judgment of other physicians, the second highest loading was on the variable measuring the number of patients referred to other physicians for treatment. Other factor loadings depict the physician typified by this factor as one who works in above average hospitals, makes considerable use of laboratory techniques in his diagnoses, devotes some time to treating charity patients, is quite satisfied with hisposition in medicine, and does not feel the need for leisure time activities. In general, one gets the picture of a general practitioner who is actively fulfilling the vital role of providing discriminating guidance for his patients to the multiplicity of specialist services, thereby ensuring more adequate treatment of the "whole patient."

By reflecting the loadings on Factor C, one observes a common thread running throughout its variables: specifically, *Satisfaction from Interpersonal Relationships.* The high scorer spends a greater than average proportion of his time actually working with patients, derives an above average amount of satisfaction from his medical work, and quite frequently delivers speeches to laymen groups on both medical and non-medical topics. Overall, these loadings suggest a person with considerable social skill or an effective "bedside manner." Secondary loadings also show a general lack of involvement in the medical profession per se: the high scoring general practitioner tends to rely on drug detail men rather than primary sources to keep himself informed on pharmaceutical developments, and tends not to treat charity patients, utilize laboratory techniques to aid in his diagnoses, or to deliver papers at scientific or professional meetings. Finally, this type of physician has an above average income and has received some nominations as a preferred consultant by his general practitioner colleagues.

When reflected, the highest loading variables on Factor D rather clearly deal with *Medical Charity Work.* As with Factor E in the Urban Specialist sample, the variables describe a physician who voluntarily provides an above average amount of free medical care both in his office practice and through local charitable institutions. Other secondary loadings indicate a tendency to be active in professional societies and to have laboratory work done outside of the doctor's office. Overall, a lenient, charitable practitioner is presented by the factor pattern.

An obvious title for Factor E is that of *Size of Medical Practice.* The variables loading highest on this factor deal with size of the physician's practice, number of hospitalized patients, number of hours per week devoted to the doctor's profession, and gross income, respectively. Other loadings rather clearly support this interpretation: the high scoring doctor is frequently called into emergency treatment, receives a large number of referrals from other physicians, has a heavy appointment schedule, a large ancillary staff, and little time for leisure and home activities. In view of a large practice and a high income it is not surprising that this type of practitioner tends to rate himself as more successful than most of his colleagues.

Factor F mainly involves the extend to which the general practitioner deliberately attempts to limit and control the size of his practice. Other variable loadings indicate the physician characterized by this factor treats some, but not many, charity patients and tends to rigidly adhere to his appointment schedule and discourages emergency office or hospital calls, even though he has a relatively large medical practice. Moreover, such a physician is less mobile than his associates, has a number of years of professional experience behind himself, has spent a minimal amount of time in internship and residency training, and reports contributions directly related to medicine, rather than society, when asked to evaluate his achievements over the years. In summary, a rather clear impression emerges of a general practitioner who quickly established himself and through the years has developed his practice to the point that he feels confident enough to limit it to meet his professional needs and standards. Therefore, an appropriate title that might be used is Established Medical Practice.

Factor G is one of the few factors found in this project which does not seem to isolate an area dealing with some type of endeavor that would be considered a genuine contribution to the medical profession. Its highest loading is on the variables measuring the Amount of Malpractice Insurance Carried by the physician. Other variable loadings show a physician who generally disregards psychological or psychosomatic considerations in treating his patients, does not attend many scientific or professional meetings, works in an above average number of hospitals (which are not marked by their quality of medical care), and has been less mobile than his colleagues. The most significant pattern emerges with the following variables: he has a below average reputation among his colleagues, takes considerable time for leisure activities, and feels quite satisfaied with his medical practice. In general, one gets the picture of a physician who lacks a very deep commitment to medicine and who tends somewhat to use his profession merely to satisfy his non-medical interests and pursuits. With such indifference, then, it is understandable that such a doctor carries a great amount of malpractice insurance.

The characteristics presented by Factor H appear consistent with a dichotomy between those physicians in individual practice and those in some form of Group or Clinic Practice. Specifically, its highest loadings are typified by a doctor practicing in a group or clinic with a well-equipped office that is staffed by a large ancillary staff of nurses. Secondary loadings describe a general practitioner who relies on drug detail men for information on the use of new drugs, has been involved in some medical research, and perhaps because of a lack of professional experience, has not presented many papers at scientific or professional meetings. It is interesting to note that this factor did not load on any of the criterion measures relating to the quality of medical care provided. According to Peterson (1963), other investigators have found a positive relationship between group or clinic practice and the quality of care given to the patient.

When reflected, the most outstanding feature of Factor I is that the high scoring physician places an above average amphasis on maintaining an expensive, well-equipped office with laboratory facilities. As expected, a relatively large proportion of his patients are judged by him to require laboratory work. A second feature is the doctor's willingness to provide emergency care to his patients in their homes, in the local hospitals, and in his office after regular hours. In his office, the physician tends to accept a large number of referrals from his associates, who nominate him as a preferred consustant, he is lax about his appointment schedule, and he generally disregards psychosomatic factors in his diagnoses, thereby allowing him to spend considerably less time than his psychologically orientated colleagues in explaining his findings to his patients. In keeping informed about developments in medicine, this general practitioner relies on professional journals and drug detail men, for whom he has made extensive experimental use of their samples. All in all, with so many varied loadings this factor is quite complex and difficult to succinctly label. However, in view of the physician's large outlay for equipment and laboratory facilities, together with his disinterest in psychological factors in medical diagnoses, one might infer an Emphasis on Medical Equipment, in assisting the physician to arrive at his clinical judgments.

If reflected, Factor J, Diagnostic Thoroughness, appears somewhat similar to Factor B obtained in the Urban Specialist study. In both samples, the physician typified by the factor makes extensive use of laboratory information derived from both his own office facilities and those of the local hospitals and laboratories in reaching his diagnoses which he carefully explains to the patients concerned, even though excessive time is required. Also, this might indicate a general scientific orientation towards medical diagnoses. Secondary loadings describe a general pracritioner who treats an above average number of charity patients in local institutions (but not in his office), works in only one or two hospitals, and belongs to relatively low status societies.

Since dicisions concerning the granting of hospital privileges, (which vary in stringency with various hospitals) is made by physicians associated with the hospitals, a hospital affiliation factor, such as Factor K, could be labeled Hospital Staff Recognition. The high scoring doctor on Factor K was found to maintain courtesy privileges in a larger in a larger number of hospitals that are judged to maintain superior medical standards. Also, even though this type of practitioner tends to send most of his sick patients to only a few hospitals, these too are judged to maintain high standards of medical care. Moreover, since secondary loadings show these physicians have received lengthy internship and residency training in a variety of hospitals there is some indication that through this type of training the physicians have "learned the ropes," so to speak, in gaining the acceptance of hospital selection committees.

Factor L involves Quantity of Hospital Responsibilities, since the highest loading indicates the physician has an above average number of responsibilities in the hospitals in which he works. Secondary loadings show that he adheres to his appointment schedule, has a good reputation among his general practitioner colleagues, runs clinical studies with drugs provided by pharmaceutical houses, has had only a few years of professional experience, has considerable internship and residency training, has an attractive, modern office, is seldom asked to address laymen groups, and has taken only a few, if any, postgraduate courses. The last two negative variable loadings could be attributed to the doctor's lack of professional experience. The overall impression is of a young, ambitious, well-trained general practitioner who is attempting to both increase the size of his practice by somewhat superficial techniques (modern appearing office; adhering to his patient appointment schedule), and quickly gain some visibility within the profession (large number of hospital duties; experimentation with drugs).

Factor M, when reflected, rather clearly involves Self-Evaluated Contribution to Medicine. High variable loadings show that the physician characterized by the factor, when asked what his major contributions have been, answers with an above average number of contributions which are directly related to medicine, rather than society in general. Moreover, these contributions are also judged to be significant by expert medical judges. High scorers are also satisfied with their profession, have attained some public recognition for their achievements, and impressed the project interviewer with their interest or involvement in the present study. In view of the fact that the contributions elicited by these physicians are judged outstanding and have attracted public recognition, it is worth noting that the criterion variables dealing with peer evaluations did not appear on this factor.

Factor N, as with Factor M, concerns the physician's responses when asked what his major contributions have been. However, on this factor the high scoring doctor tends to elicit an above average number of general contributions to society, rather than strictly professional contributions, thus the title Self-Evaluated Contribution to Society. Other secondary loadings seem to support this interpretation. Specifically, the doctor typified by this factor frequently delivers speeches to laymen groups on non-medical topics, has not been active in medical research, and when asked what most contributes to a doctor's success, he tends to respond with attributes that are not in agreement with other general practitioners. Moreover, the variables on this factor that are concerned with his office practice seem to describe the stereotyped notion of a "society doctor." For example, his patients are of upper socio-economic levels, his patient load is very light, he meets his patients in his office or the hospital rather than at their homes for emergency treatment, he has a well-equipped, modern office, and seldom refers his patients to other physicians for treatment. Other secondary loadings show the high scorer is nominated as a preferred consultant by his colleagues and derives considerable satisfaction from his medical activities. Overall, this factor seems to describe a physician who moves easily among people because of considerable social skills. Such a pattern appears similar to Factor N of the Urban Specialist sample.

When reflected, Factor O, Attainment in Publications, appears to be a specific factor relating to the number of publications produced. Other than this, there is little that characterizes the high scorer; i.e., he shows lengthy internship and residency training, an above average number of referrals from other general practitioners, and poor attendance at national and regional professional society meetings. Moreover, since only about 10% of this total general practitioner sample has done any publishing at all in professional journals, this factor could be partly explained as being technique determined (due to the stretching of the vector of the variable concerned with the number of publications to unit length by placing unity in the diagonal). A similar factor, Factor M, was found in the Urban Specialist study.

If reflected, the most salient feature of Factor P is its high loading on the criterion variable dealing with the number of listings in honorary compendiums, such as Who's Who in American Medicine. An appropriate title, therefore, might be *Professional Recognition for Achievements*. A second major loading which could have contributed to being mentioned in the compendiums is on the variable measuring the number of papers read at scientific and professional society meetings. Other secondary loadings contribute to an impression of a physician who also maintains high standards of medical care for his patients: i.e., he emphasizes psychological or psychosomatic influences as causal factors in physical illnesses, he makes frequent use of laboratory techniques in his diagnoses, he tends not to rely on the information provided by drug detail men, he closely adheres to his appointment schedule, and he sends his patients to several hospitals which are judged to maintain superior standards of medical care and treatment.

When asked to evaluate himself in terms of his success in the medical profession, the physician typified by Factor Q (reflected) tends to rate himself above average. However, other factor loadings fail to lend support to his evaluation. Specifically, positive secondary loadings were obtained on variables measuring the socio-economic level of the general practitioners' patients and the level of participation in medical research; negative loadings were found on the variables dealing with the number of clerical and administrative employees on the doctor's ancillary staff, the number of patients referred to the physician, and the average number of speeches delivered annually to laymen groups on medical topics. Therefore, there is little that distinguishes the high scorer on this factor except that he considers himself to be quite successful. Thus, an obvious title for this factor is *Self-Evaluated Overall Professional Success*.

Factor R rather clearly involves *Keeping Abreast by Means of Journal Reading*. Its three major loadings are on the criterion variables concerning the use of professional journals as a source of keeping informed of developments in the physician's field or specialty. Other less significant loadings indicate considerable activity in medical research and professional society participation at all levels (local, state, regional, and national), including the presentation of research papers at these meetings. The high scoring physician on this factor also devotes an above average amount of time to treating charity patients in the local institutions and claims to be quite satisfied with his role in the medical profession. This factor pattern was also found with the Urban Specialist sample (Factor P).

When reflected, Factor S, as with Factor P, is a source-of-information factor, but it is specifically related to postgraduate education. It shows that doctors characterized by the factor rely on and take a relatively large number of university level postgraduate or refresher courses (which carry no academic credit) in order to keep informed of developments in their field, thus the title *Keeping Abreast by Means of Refresher Courses*.

Other variable loadings show a general practitioner who attends and reads papers at an above average number of national and regional, but not state or local, professional society meetings; works in several, rather than a few, hospitals; and has cooperated with pharmaceutical houses more than his colleagues in doing clinical research on drugs p provided by drug detail men. If a similar factor, Factor Q, had not been found for the Urban Specialist study, one might be tempted, in view of the lack of many high loading criterion variables on this factor, to conclude it to be a factor specific to only the one criterion measure of keeping abreast through refresher courses.

Factor T, still another source-of-information factor, primarily involves the variable measuring the extent to which the general practitioner utilizes classes or courses sponsored by scientific or professional societies to keep up with research in medicine and, therefore, could be labeled Keeping Abreast by Means of Professional Society Courses. Also, as expected, such a physician attends a slightly greater-than-average number of national and regional society meetings. Moreover, and probably because the doctor described by this factor has a large patient load and a small ancillary staff, he tends to work longer hours than other general practitioners. Other secondary loadings show the high scoring physician generally finds drug detail men of little assistance in keeping abreast, he practices in an office that is not judged to be attractive or modern, and he frequently addresses laymen groups on medical topics.

Factor U is the final source-of-information factor. Its highest loading criterion variables indicate a general practitioner who tends to rely on both postgraduate university courses carrying academic credit and uncommon or unusual techniques for keeping up with progress in medicine. An example of an uncommon techniques is where a group of physicians send only one of their members to a professional society meetings, who in turn reports back to the group on the proceedings of the meeting. Also, for general practitioners it is likely that taking postgraduate University level courses for academic credit is also an uncommon technique (less than 20% have ever taken a postgraduate course) so that both variable loadings indicate some divergence from the general practitioner norm with respect to sources of information. All in all, an appropriate title for this factor would be Keeping Abreast by Means of Uncommon Techniques (a similar, but more specific factor was found with the Urban Specialist study). In addition to using unorthodox methods for keeping informed, the doctor typified by this factor has a large non-technical ancillary staff, rigidly adheres to his appointment schedule, discourages making house calls, finds drug detail men of some help in providing information about pharmaceutical developments, and attends and reads papers at a slightly greater-than-average number of scientific and professional society meetings.

The variables on Factor V rather clearly indicate a Participation in Professional Societies factor. The physician portrayed by it attends, holds membership, and has held office in a large number of scientific and professional societies, some of which are relatively prestigefull. The third highest factor loading also shows the high scoring physician has been in practice for some time. Such prolonged professional experience could obviously be an underlying factor influencing the physician's present status in professional societies. At the social level, the high scoring doctor also shows considerable organizational activity; i.e., he belongs to several social organizations and his church activities extend beyond regular attendance. Still other loadings indicate that the general practitioner characterized by the factor utilizes both postgraduate courses and and number of professional journals in keeping abreast. Overall, the impression is given of a physician who, through his years of experience, has established his practice to the extent that he can now direct his energies toward social and professional society activities wherein he has considerable interest and skill.

Factor W rather clearly involves Off-the-Job Socializing. High loadings describe a general practitioner who belongs to an above average number of social and avocational organizations, has held offices in such organizations, and tends to be in an individual rather than a group or clinic practice. Minor secondary loadings are on variables dealing with the number of hospitals a physician sends his patients to, gross income from the medical profession, and the annual number of lay speaking engagements on medical subjects. In general, an impression is given of a general practitioner who fulfills the role of a social leader and link between the medical profession and social and laymen groups.

A companion to the above factor is Factor X, Civic Participation. The high scorer both belongs to and holds offices in civic and political organizations, gives speeches to laymen groups on both medical and non-medical topics, and tends to list things related to society in general, rather than medicine specifically when asked what his contributions have been. Otherwise, there is little that distinguishes him from his colleagues. A similar but more complex factor was found in the Urban Specialist study (Factor U). Thus, the picture is of a doctor who is devoting a significant amount of his energies and efforts to contributions as a responsible citizen and community leader, rather than to professional or medical achievements.

The high negative loadings for the variables measuring professional mobility rate and years of professional experience, coupled with the high positive loading for the variable concerned with the number of church activities engaged in, strongly suggest that high scoring general practitioners on Factor Y quickly and deliberately selected Utah as their place of practice, and probably because of their religious identifications which can be quite pronounced in this state. In his office practice, the high scoring doctor tends to treat patients of upper socio-economic levels and at his office or a local hospital when emergency treatment is required. Also, he devotes an above average amount of time to his office practice and to treating charity patients in the nearby charitable institutions. Outside his office, the physician characterized by this factor frequently addresses laymen groups on medical topics and belongs to local (state, county, and city), but not national or regional, scientific and professional societies. As expected, these societies to which he belongs tend to be judged of inferior quality. Perhaps because of a premature commitment to practice in Utah, the high scoring physician indicates a below average overall satisfaction with his profession. In general, the factor pattern for Factor Y suggests that it measures the degree to which the physician it typifies quickly, and perhaps hastily, sank his roots into Utah to practice medicine: i.e., Professional Stability.

If reflected, Factor Z appears to be a Leisure Planning factor. Its two highest variable loadings are on measures concerned with the amount of vacation taken annually and the degree to which weekly leisure time activities are scheduled and followed through. Supporting this, it is observed that the doctor scoring high tends to be in a group or clinic practice which provides more opportunities than does an individual practice for planned vacations and leisurely pursuits. Also, the fact that the physician is able to succeed in scheduling vacations and leisure activities could contribute substantially to the observed feeling of overall professional or occupational satisfaction. Similarly, since the high scoring doctor has only an average income but still takes a great deal of time off, it is not surprising that he does not maintain a modern appearing and well-equipped office. Other variable loadings show a physician who attends local (state, county, and city) professional societies that tend to be of higher status value by the profession.

Factor X of the Urban Specialist study and Factor AA for this general practitioner sample seem to be almost identical. In both studies, the highest loadings are on variables concerning the impact a physician had on the particular researcher that interviewed him. Otherwise, there is nothing particularly outstanding in one way or another about the high scorer. Again, then, the best title might be Interviewer's Rating of Likeability. Also, since high scoring physicians make favorable impressions on the project interviewer, they probably have above average social skills, which they can use effectively to impress others when the situation requires.

Factor BB is chiefly concerned with the doctor's evaluation of what constitutes success within general medical practice. Loadings on this factor indicate the physician typified by it has unusual or uncommon ideas about outstanding achievement in medicine. Thus, it could be called an Unorthodox Success Image factor as in Factor Z of the Urban Specialist study. A second, and a perhaps related, feature of this factor appears to be a difficulty on the part of this type of physician in communicating with his patients: i.e., he feels a large proportion of his patients take an excessive amount of his time to understand his diagnoses. Two other secondary loadings show the high scoring physician treats a large number of patients with psychological or psychosomatic problems and is not highly regarded by his general practitioner colleagues. All in all, a rather consistent pattern appears describing a doctor that is somewhat of an "odd-ball," who is rejected by his colleagues, and has trouble in relating to his patients.

Factor CC seems comparable to Factor AA of the Urban Specialist sample, and, accordingly is named Late Attainment of M.D. Degree. Specifically, on both factors high loadings were obtained on the control variable dealing with the age when the medical degree was received and the criterion variable measuring the extent to which the physician relied on drug detail men to keep him informed of developments in medicine. Secondary positive loadings are also observed on variables concerned with the amount of time devoted to treating charity patients outside of the physician's office and the proportion of office patients having primarily psychological or psychosomatic problems. Secondary negative loadings are seen on the criterion measures for gross income and patient load.

When Factor DD is reflected, it has high loadings on all three measures of academic performance and zero-order loadings on all remaining variables. Thus, as with the Full-Time College of Medicine Faculty and the Urban Specialist studies, an Achievement in Education factor clearly emerges. In other words, other than being a good grade-getter in medical education there is nothing at all that distinguishes the high scorer on this factor. Also, as with the Full-Time Faculty and the Urban Specialist studies the argument that such results are attributable to restriction of range seems questionable at best. For example, an examination of the rotated factor matrix (Table XV) shows that no single measure with factor loadings greater than .20 fell into more than 10 of the 30 factors, the average number being approximately 3, and the three measures of academic performance (premedical and the first and last two years of medical school) all appeared in only 2 of the 25 factors. In view of this, it is unlikely that if grades were unrestricted in range they would suddenly appear in 3 of the factors, and extremely improbably that they would fall into all 30 factors. Since it seems clear that the characteristics rewarded by medical school grades should be the same characteristics involved in successful performance as a physician and since these results fail to demonstrate such a relationship, there is again a demonstrated need for research in medical education.

Conclusions: The results of this study once again indicate the great complexity of the total criterion problem. Generally speaking there was very little overlap between the different measures relevant to physician performance, one factor was obtained for approximately every three scores, and the model number of factor loadings greater than .20 on individual factors was also 3. While one might make judgments about the relative importance of the various factors as indications of successful performance as a physician on the basis of the results of this study one could not justify taking one score, or even a few scores and concluding that he had a satisfactory criterion of physician performance.

Urban General Practitioner Sample:

Subjects: The population under consideration consisted of the 245 physicians practicing in the urbanized Ogden-Salt Lake City-Provo complex of the State of Utah who had not fulfilled the American Board requirements for certification as a specialist, and who, therefore, were classified by us as urban general practitioners. Letters signed by the Dean of the University of Utah College of Medicine were sent to the physicians requesting that they participate in this project (participation primarily involved an interview lasting approximately one hour). A second letter was sent to those physicians who did not respond to the first letter; physicians who did not respond to the second letter were dropped. Ultimately, there were 110 physicians who agreed to participate. This smaller group of 110 physicians comprised the sample actually studied in detail in this particular study of the total project.

Criterion Measures: The same 80 scores relevant to physician performance that were used with the combined Urban and Rural General Practitioner sample were employed as criterion measures for this sample of physicians. The titles of the variables and the sources from which they were obtained are listed in Table XI.[7] Details of the system by which raw scores were derived for each variable are presented in Appendix C.

Representativeness of the Sample: Data on the 135 urban general practitioners who did not participate in the study were available on only four of the criterion measures that were collected for the participating general practitioners: age at which the M.D. degree was obtained, number of colleague nominations as a preferred consultant, number of publications, and the score indicating the degree to which the physician specialized within his general practice. On these four scores, t tests were made comparing the participating and non-participating urban general practitioners. Out of the four possibilities, two significant differences were found. They indicated participants had more publications than non-participating physicians and were also nominated more frequently as a preferred consultant by their general practitioner colleagues. In view of these findings and the small number of comparisons made, it is felt that generalizations are not warranted, one way or another, concerning the representativeness of this sample. However, in view of the fact that 45% of the population is contained within our sample, it is not felt that this is a critical consideration. In any case, in an initial study such as this the most important consideration is to go as far as you can in correlational analyses of the data you have managed to collect. The wide range of criterion scores on the participant sample should enable any strong relationships among the different criteria to clearly emerge.

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[7] All tables for this sample are presented at the end of this chapter.

Results: In view of the fact that the same 80 criterion variables were factor analyzed in all three general practitioner samples (see Table XI), we have departed from our previous system of reporting our results. Specifically, it was felt that the results could be more meaningfully reported if factor similarities and differences between these samples were emphasized, rather than presenting, as we have done in the past, a straight forward description and interpretation of the numerous factors obtained. Accordingly, measures of the degree of similarity between the factors obtained from each of the groups were computed[8] (see Tables XXIV, XXV, and XXVI). As such, it is possible to report the results for both the Urban General Practitioner sample and Rural General Practitioner sample in terms of the rotated factors that are "identical," "similar," or "different"[9] from these found in the Combined Urban and Rural General Practitioner sample.

An examination of the results obtained in our factor analysis[10] of the 80 criterion measures utilized in this Urban General Practitioner sample (Urban Sample) as presented in Table XXIV shows that 7 of the 28 obtained factors were so similar to 7 of the factors found in the Combined Urban and Rural General Practitioner sample (Combined Sample) that they could be classified as identical and given the same titles:

| Urban Sample | Combined Sample | Title |
|---|---|---|
| A | A | Level of Medical Specialization |
| J | K | Hospital Staff Recognition |
| P | R | Keeping Abreast by Means of Journal Reading |
| T | W | Off-the-Job Socializing |
| Y | BB | Unorthodox Success Image |
| Z | AA | Interviewer's Rating of Likeability |
| BB | DD | Achievement in Education |

Moreover, Table XXIV shows that 12 of the 28 Urban Sample factors were congruent enough to 12 of the Combined Sample factors to be classified as similar enough to be given the same titles:

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[8] For the statistician, the index of factorial similarity was that developed by Burt (1948), Tucker (1951), and Wrigley and Neuhans (1952) which Harmon (1960, pp. 256-259) labeled the "coefficient of congruency."

[9] Two factors were considered identical if their coefficient of congruency was higher than .80, similar if it was between .55 and .79, and different if it was below .54.

[10] See Tables XV through XIV at the end of this chapter for the resultant intercorrelation matrix, the table of eigenvalues and cumulative proportion of variance accounted for; the unrotated factor matrix, and the rotated factor matrix, respectively, for the Urban Sample.

| Urban Sample | Combined Sample | Title |
|---|---|---|
| C | D | Medical Charity Work |
| D | Q | Self-Evaluated Overall Professional Success |
| E | F | Established Medical Practice |
| F | U | Keeping Abreast by Means of Uncommon Techniques |
| G | H | Group or Clinic Practice |
| K | L | Quantity of Hospital Responsibilities |
| Q | J | Diagnostic Thoroughness |
| R | E | Size of Medical Practice |
| U | X | Civic Participation |
| V | Y | Professional Stability |
| W | V | Participation in Professional Societies |
| AA | CC | Late Attainment of M.D. Degree |

To this point, then, 19 of the 28 factors obtained in our factor analysis on the Urban Sample have been accounted for. Since they represent essentially the same factors as their companion Combined Sample factors, their descriptions and interpretations will not be repeated here. (For the interested reader, reference is given to Table XI for the titles of the criterion measures, to Table XIX for the Urban Sample rotated factor matrix, and to the Results portion of the Combined Sample section of this chapter for the factor descriptions and interpretations); for the remaining 9 rotated factors (B, H, I, L, M, N, O, S and X) a description and analytical interpretation of each of them is given in the paragraphs that follow.

The highest single loading on Factor B was on the criterion variable measuring the extent to which the physician relies on drug detail men as a source in keeping abreast of his medical practice, thus the title Keeping Abreast by Means of Drug Detail Men. Other results show that the doctor typified by this factor has several nurses on his ancillary staff, receives a large number of referrals and requests a large number of consultations from other physicians, hospitalizes an above average number of his patients, takes extended vacations, and tends to be a younger and less experienced physician than his urban general practitioner colleagues. Overall, this factor pattern is quite similar to Factor R of the Urban Specialist sample presented in Chapter III.

The most salient feature of Factor H as reflected is the physician's Willingness to Provide Special Attention to Patients. Specifically, the high scoring general practitioner on this factor spends considerable time with his patients explaining his diagnoses to them. Supporting this, the physician also tends to adhere to his appointment schedule, thereby inferring that he deliberately allows time in his schedule to ensure that his patients understand his treatment, impressions, and findings. Other features of this factor pattern are mostly negative: the high scorer does not attend, does not take courses while attending, and does not read papers at scientific or professional society meetings; he does not make many house calls; he practices in an office lacking immediate laboratory facilities; and he has only a few years of professional experience. In general, an impression is given of a relatively young and inexperienced general practitioner who is concentrating his efforts toward building his practice by meeting his patients' needs, perhaps, at the expense of neglecting other medical activities which would lead to professional rather than patient recognition.

An examination of Table XXIV shows that Factor I, as well as Factor Q on this Urban Sample are similar to Factor J, Diagnostic Thoroughness, of the Combined Sample. However, the computed coefficients of congruency also show that Factor Q is more similar than Factor I. Thus, Factor Q, rather than the present Factor I, was titled Diagnostic Thoroughness. Moreover, inspection of the factor patterns of Factor I and Factor Q suggest that Factor I (as reflected) is concerned more with a Scientific Orientation Towards Medical Diagnosis. In other words, physicians characterized by Factor I not only rely heavily on laboratory techniques in making their diagnoses but they also have invested money to supply their office building with such laboratory facilities. Physician typified by Factor Q have not felt the need either to expend this money or to send their patients to existing laboratories outside of their office. Other smaller loadings seem to support this scientific orientation: the high scoring doctor reads papers at scientific and professional society meetings, has worked in several hospitals during his internship and residency, and is listed more often than his colleagues in honorary compendiums, such as Who's Who in American Medicine. Surprisingly, this type of physician is also quite active in civic affairs, having delivered an above average number of speeches to lay groups and having held several offices in civic organizations. Finally, in his medical practice, this doctor tends to have several patients who are hospitalized in hospitals judged of superior quality, spends little time actually seeing his patients, and treats some of them without charge.

Although the computed indices of factorial similarity failed to show that Factor L of this Urban Sample was similar to Factor M of the Combined Sample (see Table XXIV), an analytical comparison certainly does so. The highest loadings on both factors show that the physician characterized by both of them, when asked what his major contributions have been, answers with an above average number of contributions which are directly related to medicine, rather than society in general. Moreover, in both cases these contributions are also judged to be significant by expert medical judges. Finally, both factors load moderately on the variable dealing with the number of listings in honorary compendiums. In view of these similarities, it is felt that Factor L might be best titled the same as Factor M: Self-Evaluated Contributions to Medicine. In searching for an explanation of the failure of our measure of factorial similarity to find these two factors congruent, two things are noted. First, a few secondary loadings appeared on the factors that were not shared by both. Factor M, but not Factor L, loaded on the variables measuring the degree of overall professional satisfaction and on the interviewer rating of the physician's involvement or interest in the present study. Factor L, but not Factor M, loaded on the following criterion measures: number of internship and residency hospitals, gross income, amount of vacation taken annually, and the number of hours worked per week. Secondly, in our analytic interpretation of these factors only those variables loading above .20 were considered; with our index of factorial similarity all variable loadings were incorporated into the analysis. As such, the index of factorial similarity was influenced by over 60 variable loadings that were of a zero-order magnitude. These two things may well have caused the objective measure of similarity, which is a very stringent one, to overlook the pattern which we fell is quite obvious upon analytical inspection and interpretation.

A problem similar to that on the above factor also appears with Factor M for this Urban Sample. Both Factor M of this sample and Factor N of the Combined Sample have similar factor patterns especially in terms of the high loading criteria but did not meet the criterion established (coefficient of congruency of .55 or greater) for our index of factorial similarity to conclude that we have similar factors. Specifically, both factors show loadings of greater than .20 on the following criterion variables: self-evaluated contributions to society, number of speeches delivered to laymen groups on non-medical topics, and average socio-economic level of the doctor's patients. Thus, in terms of consistency across groups it is felt warranted to label this factor, Factor M, Self-Evaluated Contribution to Society as we did Factor N of the Combined Sample. Supporting this interpretation we note that Factor M also loaded highly on the variable measuring the number of civic organization memberships.

Again with Factor N of the Urban Sample we run into problems concerning factorial similarity not revealed by our index of similarity. With both this factor and Factor O of the Combined Sample we find a pattern with the following characteristics: a single high loading (.78) on the criterion variable measuring productivity in publications, a few secondary loadings (between .20 and .35) which lack any consistency or obvious relationship to publication activities, and the vast majority (more than 90%) of the variable loadings of a zero-order magnitude. Obviously, a sensitive measure of factor congruency would not judge these two factors as similar. However, in view of the fact that productivity in publications is the only clearly salient feature of both factors it seems reasonable that they both be labeled the same. Accordingly, Factor N is given the identical title, Attainment in Publications, as Factor O of the Combined Sample. Moreover, since such a factor has been found in all of the studies reported herein, it appears that perhaps we are really dealing with two similar factors that have been contaminated by chance sources of variability.

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Overall, Factor O of this Urban Sample (as reflected) appears to involve the traditional "family doctor" pattern. The high scoring physician is most characterized by being available to his patients at all times: he makes numerous house calls and frequently meets his patients after office hours in his office or at the local hospitals to provide emergency treatment. In view of this willingness to meet the needs of his patients, it is not surprising to find that he has a large practice, is not able to regidly adhere to his appointment schedule, and frequently refers patients to other doctors for treatment. Other secondary loadings describe a physician who maintains a well-equipped, impressive appearing office, frequently requests advice from other physicians, reads an above average number of journal articles, and carries a large amount of malpractice insurance. Also, we find a doctor who is listed less often than his colleagues in honorary compendiums and generally avoids reading papers at professional meetings. In general, one gets the impression of a general practitioner who perceives his role in medicine as that of treating patients. Accordingly, he has made his professional services available to them and has not distinguished himself in any of the other areas of medicine, such as research or professional society activities. Thus, an appropriate title for Factor O would be Availability to Patients.

Factor S presents a rather complex pattern of variable loadings and does not readily lend itself to interpretation. Two major themes appear to dominate its structure. The first concerns professional society memberships: i.e., the high scoring physician belongs to an above average number of scientific or professional societies which, because of high entrance requirements, tend to be judged or superior quality. In view of the demanding requirements for entrance into these societies, one would also expect its members to b well-established in the medical profession. Secondary loadings support this deduction. The physician typified by this factor has several years of professional experience behind himself, has made contributions to both society and medicine, the latter accomplishments being judged worthy of recognition, has achieved some national recognition, as evir by listings in honorary compendiums, and has a larger-then-average patient load. Also, this physician has taken an above average number of courses offered by the professional societies in which his memberships are current. The second theme within this factor concerns organized leisure planning: i.e., the high scoring doctor takes extended annual vacations and is able to enjoy regularly scheduled, off-hour leisure activities between his vacations. With such organization of his time, it is not surprising to find this type of physician belongs to several social or avocational organizations. All in ll, an appropriate combined title for this factor might be Professional Society Memberships--- Leisure Planning. Taking everything into consideration, a pattern emerges of a successful, well-established general practitioner who after years of diligent application has finally reached the point where he can gradually move into a lighter work load with more time for leisure activities.

Factor X is the last of the factors revealed by our factor analysis of the data collected on this Urban Sample. It appears to a companion to Factor V, which was interpreted to measure Professional Stability, whereas Factor X appears to deal with

Professional Mobility. Its highest loading is on the criterion variable concerned with the average number of professional positions held per year since the physician started his practice of medicine. A second loading also shows that the high scoring physician on this factor took his internship and residency training in several, rather than a few hospitals. Other secondary loadings show that despite considerable experience with "basic" medical research, this type of doctor is also quite willing to accept and look for psychological or psychosomatic factors in his diagnoses. Still other loadings indicate that this physician readily consults with and refers his patients to other physicians, treats patients of lower socio-economic levels, and takes a below average number of postgraduate courses.

Conclusions: This section of the report has been concerned with exploring criteria of performance of urban general practitioners. This sample of physicians was one portion of the larger combined sample of doctors comprising both urban and rural general practitioners already reported in the previous section of this chapter. It was hoped that nearly all the factors found for this smaller Urban General Practitioner sample would turn out to be essentially the same as those found for the larger Combined Urban and Rural General Practitioner sample. If so, we felt the general practitioner problem would be greatly simplified---we could perhaps talk of general practitioners in general rather than having to specify whether we were referring to urban general practitioners or rural general practitioners. In terms of results, we only partially confirmed our expectations. Specifically, 7 of the 28 factors obtained with the Urban Sample were found to be "identical" with 7 of the factors found with the Combined Sample, 12 of the factors were found to be "similar," 3 of them were found to be "roughly similar" at an analytical level, and only 6 were found to be "different" factors that were specific to the Urban General Practitioner sample. Thus, even though considerable similarity was found between the two studies, the finding of some lack of agreement was sufficient to warrant the present study and to cause the authors to re-emphasize the complexity of the criterion problem. Certainly, on the basis of these results and the exploratory nature of this investigation, it would be highly premature to conclude that the Urban General Practitioner sample and the Combined Urban and Rural Practitioner sample were drawn from essentially identical populations. In other words, similarity was the general finding but there were enough differences to warrant separate studies which provide some unique descriptions of the Urban Sample.

### Rural General Practitioner Sample:

Subjects: The population studied in this section of this chapter consisted of the 253 physicians who were practicing in the state of Utah outside of the Ogden-Salt Lake City-Provo complex and who had not fulfilled the American Board requirements for certification as a specialist. Because these physicians had not achieved specialty certification they were considered general practitioners. Moreover, since the population of Utah is distributed such that well over 50% of its residents are concentrated within the Ogden-Salt Lake City-Provo complex, it was felt that doctors practicing outside of this area should be classified as rural general practitioners. Letters signed by the Dean of the University of Utah College of Medicine were sent to these rural general practitioners requesting that they participate in this project (participation primarily involved an interview lasting approximately one hour). A second letter was sent to those physicians who did not respond to the first letter. If these physicians consented to participate, they were retained; if they did not respond to the second letter, they were dropped. At any time, a physician was dropped from the sample without further correspondence if he declined to participate. Ultimately, there were 107 rural general practitioners who comprised the sample actually studied in detail in this section of this chapter.

Criterion Measures: The same 80 scores relevant to physician performance that were used with both the Combined Urban and Rural General Practitioner sample and the Urban General Practitioner sample were employed as criterion measures for this sample of physicians. The titles of the measures and the sources from which they were obtained are listed in Table XI.[11] Details of the system by which raw scores were derived for each measure are presented in Appendix C.

Representativeness of the Sample: Data on the 146 rural general practitioners who did not participate in the study were available on only 4 of the criterion measures that were obtained from the participating rural general practitioners: number of publications, number of colleague nominations as a preferred consultant, age at which the M.D. degree was obtained, and a score indicating the degree to which a physician specialized within his general practice. On these 4 scores, t tests were made comparing the participating and non-participating physicians. Out of the 4 possibilities, 1 significant difference was found, indicating the non-participants were nominated more frequently than the participating physicians by their general practitioner colleagues as a preferred consultant. However, even though 3 out of the 4 comparisons showed no significant differences between the participants and non-participants, it is felt that in view of the small number of comparisons made and the lack of information concerning their importance generalizations should not be made concerning the representativeness of the sample. It is worth noting, however, that 42% of the total population (rural general practitioners in the state of Utah) participated in the study. With such a large segment of the rural physician population in our sample, the question of sample representativeness for this type of correlational study does not loom too serious at this early exploratory stage.

Results: In reporting our results for this sample of rural general practitioners, we will follow the same procedure as we did with the Urban General Practitioner sample. Specifically, since the same 80 criterion variables (see Table XI) were factor analyzed[12] in all three general practitioner samples and since under these conditions mathematical procedures are available to determine the degree of similarity between factors, we can report the results in terms of the rotated factors that are identical, similar, or different from the factors obtained in the Combined Urban and Rural General Practitioner sample. As such, we can avoid the lengthy descriptions and interpretations of the factors that are identical or similar. With the remaining factors that are different from any of the combined Urban and Rural General Practitioner sample's factors, we will have resort to the more lengthy system of reporting.

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[11] All tables for this section of the chapter are presented at the end of this chapter.

[12] See Tables XX through XXIII at the end of this chapter for the resultant intercorrelation matrix, the table of eigenvalues and cumulative proportion of variance accounted for, the unrotated factor matrix, and the rotated factor matrix, respectively.

First, concerning the factors that our index of congruency identified as geing identical, it will be seen from an analysis of Table XXV at the end of this chapter that only 2 of the 28 factors obtained in our factor analysis of this Rural General Practitioner sample (hereafter called the Rural Sample) were so similar to 2 of the factor patterns found in the combined Urban and Rural General Practitioner sample (hereafter called the Combined Sample) that they could be classified as identical and given the same titles:

| Rural Sample | Combined Sample | Title |
|---|---|---|
| S | X | Civic Participation |
| BB | DD | Achievement in Education |

It is also interesting to note that Factor BB on this Rural Sample was also found to be identical to Factor DD of the Urban General Practitioner sample (see Table XXVI). Moreover, Factor BB of the Urban General Practitioner sample (hereafter called the Urban Sample) was found to be identical with Factor DD of the Combined Sample (see Table XXIV). In brief, the factor of Achievement in Education appears to be common to all three of the general practitioner samples studied.

With respect to the factors that our index of factorial congruency found to be similar (but not identical) it will be seen from Table XXV that 14 of the 28 factors of the Rural Sample were similar enough to 14 of the Combined Sample factors to be given the same titles:

| Rural Sample | Combined Sample | Title |
|---|---|---|
| A | A | Level of Medical Specialization |
| B | B | Medical Consulting |
| C | C | Satisfaction from Interpersonal Relations |
| H | H | Group or Clinic Practice |
| K | K | Hospital Staff Recognition |
| M | E | Size of Medical Practice |
| N | O | Attainment in Publications |
| Q | V | Participation in Professional Societies |
| R | W | Off-the-Job Socializing |
| T | Y | Professional Stability |
| U | Z | Leisure Planning |
| X | S | Keeping Abreast by Means of Refresher Courses |
| Y | U | Keeping Abreast by Means of Uncommon Techniques |
| AA | BB | Unorthodox Success Image |

Also, Factors A, K, and AA of this sample were found to be similar, but not identical to Factors A, J, and Y, respectively, of the Urban Sample (see Table XXVI), the latter factors in turn having been found to be similar or identical to Factors A, K, and U of the Combined Sample (see Table XXIV). Thus, the factors of Level of Medical Specialization, Hospital Staff Recognition, and Unorthodox Success Image also appear to be common to all three of the general practitioner samples.

Up to this point, then, 16 of the 28 Rural Sample factors have been found to be either similar of identical to 16 of the Combined Sample factors. The remaining 12 factors, D, E, F, G, I, L, O, P, V, W, and Z, still need to be accounted for. The following description and analytical interpretation of each of these 12 factors will delve into the problem of whether they all uniquely represent only the Rural Sample.

When reflected, the major variable loadings of Factor D appear to resemble Factor O of the Urban Sample. Common to both factors is the physician's willingness to be at his patients' disposal at any time, day or night, thus the title Availability to Patients. For example, on Factor D the two largest loadings indicate that the high scoring doctor has a very long work week and frequently meets his patients after regular office hours at his office or nearby hospitals for emergency treatment. Supporting this interpretation, we find the physician sends his patients to several, instead of one or two hospitals. This would be to the patients' convenience rather than the doctor's. Also, it is not surprising to find that this physician is not able to plan and maintain leisure time activities. Other secondary loadings show the physician characterized by this factor has not been in medical practice for very long; practices alone rather than in a group, clinic, or hospital; has laboratory facilities in his office or office building; is quite active in the local hospitals; reports, when asked, that he has made contributions to medicine that other physicians rate as valuable; his general practitioner colleagues do not tend to consult with him or consider him as a contributor to medicine; he belongs to low-status professional societies; and he has taken a less-than-average number of postgraduate courses. In general, one gets the impression of a rural general practitioner who has not been in practice for too long and to establish his practice he has made himself very available to his patients, thereby leaving little time to distinguish himself in other areas of accomplishment in the medical profession.

In the Urban Specialist, Combined General Practitioner, and Urban General Practitioner samples we have consistently found a factor loading high on the control variable dealing with the age the medical degree was received (Factors AA, CC, and AA, respectively). Factor E (reflected) of this sample also appears to be a Late Attainment of M.D. Degree factor. Moreover, looking across the samples there appears to be little else that consistently relates to this single, high variable loading. In other words, in each sample several criterion measures loaded on this factor, but the same criterion measures were not present in all of the factors. So too with Factor E of this Rural Sample:

positive secondary loadings were obtained on the variables measuring the number of professional society courses taken during the physician's career, the number of journal articles read in detail each month, the number of speeches on medical topics delivered per year to laymen groups, the number of common or stereotyped responses elicited when asked to list the factors that cause a physician to be successful, the number and quality of contributions the physician has made to medicine, and the number of charity patients that the physician treats outside of his office. Small negative loadings were found on the measures of the number of office patients treated at a reduced rate and the number of patients referred to the physician by other physicians. All in all, the factor pattern is one that is marked by a single high loading variable and a number of secondary loadings that are not clearly related to the major variable loadings.

A set of factor loadings very similar to Factor E above is presented by Factor F. Factor F has a single high loading on the variable measuring the amount of malpractice insurance carried by a general practitioner, thus the title Amount of Malpractice Insurance Carried. Other variables on this factor do not bear an obvious relationship to this insurance measure. Specifically, the high scoring physician on this factor is frequently mentioned by his general practitioner colleagues as a preferred consultant or outstanding contributor to medicine, he reports contributions he has made to medicine that expert judges rate as valuable, practices in a group or clinic setting, tends to specialize, has a well-equipped, nice appearing office containing laboratory facilities, has a small ancillary staff, has not been in medical practice very long, does not try to limit the size of his practice, and when asked what he thinks makes an outstanding physician, he lists a few uncommon and an average number of common attributes.

The single high loading on Factor G (as reflected) is on the variable measuring the degree to which a physician considers psychological or psychosomatic factors in providing care to patients. Thus, it might best be titled Psychosomatic Orientation. It is interesting to note that such a factor did not appear with either the UGP or URGP groups. Perhaps, in the rural areas the general practitioner is still concerned with treating the " hole patient" and has not been absorbed in the specialization trend that eminates from the more "progressive," metropolitan areas. The pattern of the secondary loadings on this factor generally typify the rural practitioner stereotype: the high scoring doctor does not attempt to limit the size of his practice, frequently addresses laymen groups, treats a large proportion of his patients at reduced rates, feels he has made a few contributions to society, does not have laboratory facilities within his office building, tends to be in an individual, rather than a group type of practice, spent a minimal amount of time in internship and residency, and attends local but not regional or national professional society meetings.

The overall facaor pattern of Factor I strongly suggests the notion of a typical country doctor. The physician characterized by this factor makes numerous house calls, does not tend to specialize, seldom requests the consultation of other physicians, sends his patients to poorer quality hospitals, is in an individual rather than a group or clinic practice, belongs to professional societies that are of inferior quality, takes little time off for vacations, has not participated in medical research, has made few, if any contributions to medical research, and frequently gives speeches to laymen groups. Moreover, this type of physician has had some national recognition in that he tends to be listed in such honorary compendiums as Who's Who in American Medicine. All in all, a possible title for this factor might be that of Country Practitioner.

Despite the failure of our measure of factor similarity to show congruency between Factor J of this sample and Factor J of the Combined Sample, analytical analysis shows a fair amount of similarity. On both factors, loadings were obtained on the criterion variables measuring the proportion of the physician's patients that received laboratory analyses, the proportion of his patients that were sent to local hospitals or laboratories for laboratory tests, and the proportion of the physician's time that was devoted to treating charity patients in the local charitable institutions. In view of these similarities, it is felt that both factors should be given the same label, that of Diagnostic Thoroughness, especially since similar factors were also found within Urban General Practitioner and Urban Specialist studies. Moreover, other variable loadings on this factor were found which seem to support the interpretation that this type of physician resorts to a variety of techniques in making his diagnosis. Specifically, the high scoring doctor on this factor has located his practice where laboratory facilities are available or has expended his own funds to have them in his office---the latter being most likely since he indicates having spent large sums on technical equipment---and he tends to refer his patients to other physicians when he is in doubt about their treatment or his diagnosis. Still another factor loading on the variable measuring the number of patients referred to the high scoring physician for treatment and consultation suggest that this doctor has achieved some skill in diagnosing ailments. Other less obvious variable loadings were obtained on the criterion measures dealing with the number of contributions the physician indicated as having made to both medicine and society, the number of local professional society meetings attended, the extent to which the physician has experimented with drugs provided by pharmaceutical houses, and the amount of vacation taken annually.

A problem similar to Factor J above was encountered with Factor L. In both cases, our measure of factorial similarity failed to indicate a similarity in factor patterns that appears rather obvious after an analytical analysis. In the present case, Factor L, Keeping Abreast by Means of Journal Reading, appears quite congruent with both Factor R of the URGP sample and Factor P of the UGP sample (in fact, Table XXVI shows that Factor P is similar to Factor L of this sample by our measure of factor similarity). In all three studies high factor loadings were obtained on the following criterion measures: the number of subscriptions to professional journals, the number of journals reviewed regularly, and the number of journal articles read in detail each month. Morevoer, in all three cases secondary factor loadings were obtained for the measure of the level of participation in medical research and at least one of the measures of frequency of participation in scientific and professional society meetings. Other variable loadings peculiar to this factor ( and which probably contributed to the failure of the measure of similarity to pick up the above congruencies) indicate the high scoring doctor belongs to several professional societies, most of which maintain rigid entrance requirements, and is quite active in public speaking, both on medical and non-medical topics. In general, the three following tendencies are observed with this type of physician: compulsively reading and reviewing the literature, active professional society participation, and availability to laymen groups as a speaking guest.

In the Urban Specialist, Combined General Practitioner, and Urban General Practitioner studies a Self-Evaluated Overall Professional Success factor emerged. In each case the factor suffested an exaggerated self-concept of achievement that was not in agreement with other more tangible indices. In the present study of rural general practitioners, Factor O (reflected) also appears to be a Self-Evaluated Overall Professional Success factor. However, in the present study at least some evidence is given to the effect that the self-concept of the physician typified by this factor is perhaps not overly exaggerated. Specifically, the high scoring physician has presented numerous papers at scientific and professional society meetings, belongs to high-status professional societies, attends a large number of regional and national society meetings, has participated in medical research at responsible levels, enjoys an above average income and a medical practice that is neither too busy nor too small, and lists contributions he has made to medicine which experts judges consider of value. Other small loadings were obtained on variables measuring the number of times the physician experimented with drugs supplied by pharmaceutical houses, number of years spent in internship and residency, and the number of journal articles read in detail per month.

Factor P is one of the few factors found in this total project which does not seem to isolate an area dealing with some type of endeavor usually considered to be much of a contribution to the medical profession. Its highest single loading indicates the physician typified by this factor reports how he keeps abreast of developments in medicine by saying that he relies heavily on the information provided by drug detail men. In view of this, it is given the title of Keeping Abreast by Means of Drug Detail Men. Two other positive loadings show the high scoring doctor makes an above average income and, when asked to rate his success in medicine, tends to rate his success in medicine, tends to rate himself as above average. On nearly all other measures of performance that appeared on this factor at a singificant level the high scoring physician failed to indicate anything of value: his colleagues rate him as being neither a preferred consultant nor below average as an outstanding contributor to medicine, he does not take courses sponsored by professional societies, he does not attend or hold memberships in national or regional professional societies, he tends to avoid assuming responsibilities in his local hospitals, and he does not express interest in specializing at any level of medical practice.

When reflected, Factor V (reflected) appears to be a factor that is entirely unique to our RGP sample. All in all, it seems to describe a "country club" type of doctor. The highest variable loading indicates the doctor characterized by this factor treats patients of upper socio-economic levels, thus the title Socio-Economic levels, thus the title Socio-Economic Level of Patients. Other variable loadings indirectly support the view that this type of doctor caters to a wealthier clientele than his colleagues: he does not rigidly adhere to his appointment schedule, he feels quite satisfied with the size of his practice, and he is able to limit his practice to its present size. Secondary loadings also show that the high scoring doctor has a small ancillary staff, receives few referrals from other physicians, has laboratory facilities within his office area, and did not impress the project interviewer as being very concerned about or involved with the present project.

Factor W is quite complex and does not readily lend itself to interpretation. Its most salient feature is the physician's Willingness to Provide Special Attention to Patients. Specifically, the high scoring doctor spends considerable time with his patients explaining his findings and diagnoses to them. A second feature of this factor is the physician's tendency to rely on techniques other than academic types of instruction in keeping abreast: i.e., he does not enroll in postgraduate university classes or courses sponsored by scientific or professional societies. However, he does attend an above average number of local (state, county, and city) but not regional or national, professional society meetings. A third feature is a tendency to seek outside assistance in treating his patients: he sends a large number of them to the local hospitals and laboratories for laboratory tests and refers an above average number of his patients to other physicians for treatment. Still other factor loadings indicate he has not been in practice for too long, does not tend to specialize, treats some charity patients in local institutions, occasionally addresses laymen groups on medical topics, and when asked what personal characteristics are necessary for success in medical practice, he names only a few, rather than several values or attributes which tend to be common values, rather than unusual or different attributes.

The factor loadings on Factor Z (reflected) has been approximated only once before in our studies of physician performance. In only the study of the College of Medicine Full-Time Faculty did an Overall Occupational Satisfaction factor appear. In both Factor U of the Full-Time Faculty study and Factor Z of this study, the highest loaded variable was a composite measure of professional satisfaction based on self-ratings of the degree of satisfaction derived from various professional activities. As with the Full-Time Faculty study, the most striking thing about this factor is that since the composite measure of professional satisfaction appears only on this factor, this satisfaction measure is essentially independent of the other numerous aspects of performance analyzed in this report. The second outstanding feature of this factor which is different from Factor U of the Full-Time Faculty study is that the high scoring physician did not impress the member of our project staff that interviewed him. On all of the interviewer variables the physician tended to be rated below average by the project interviewer. Other secondary characteristics of this type of physician are an inclination to rate himself as an above average success in medicine, a lack of experience in medical research, several nominations by his colleagues as an outstanding contributor to medicine, and a tendency not to take courses sponsored by professional societies.

Conclusions: In this section of this chapter we have explored the numerous performances of general practitioners who are practicing in the rural areas of Utah. The physicians who participated in this study were drawn from a larger sample of doctors composed of both urban and rural general practitioners. The intent of this sub-study was to determine if the performance dimensions that we found for Rural General Practitioners were essentially the same as those that we found for the Combined Urban and Rural General Practitioner sample. In our study of Urban General Practitioners (which is reported in the preceding section of this chapter) we found both similarities and differences between Urban General Practitioners and our Combined Urban and Rural General Practitioner sample. So too with the present study. In terms of results, we found 2 of the obtained 28 factors were essentially "identical" to 2 of the factors found with the Combined Urban and Rural General Practitioner sample, 14 sets of the factors were found to be "similar, 6 more of them were found to be "roughly similar" at an analytical level, and only 6 were found to be "different" or unique factors that are specific to the Rural General Practitioner. Thus, as with the Urban General Practitioner sample, we find that despite the most general finding of observed similarities between general practitioners as a total group and rural general practitioners, sufficient differences exist between them in several areas in which one should not speak of the performances of general practitioners without also specifying whether he is referring to urban or rural general practitioners. In short, we are reiterating a persistent theme that has applied to all of the studies presented in this report, namely the complexity of the criterion problem for the medical profession.

## Integration:

At this point it might be well to pause and take stock of our findings in this chapter. We have been concerned with exploring the performance dimensions of general practitioners (physicians who are not certified). However, because we felt there were possible differences in the community settings of rural and urban general practitioners which could influence our findings, we investigated the physicians in these settings as one combined group as well as separately. This led, therefore, to one general study, comprising both urban and rural general practitioners (Combined Sample), and two sub-studies, one of which was concerned with rural general practitioners (Rural Sample) and the other with urban general practitioners (Urban Sample). In terms of results, 30 factors or dimensions of performance were found with the Combined Sample, 28 factors for the Urban Sample, and 28 factors for the Rural Sample. In summary, this total domain of general practitioner performance appears to be very complex and defies a succinct description of the collective performances of general practitioners.

Even though our results clearly indicate that general practitioner performance is a very complex phenomenon, we can see some organization and simplicity by looking across the three studies. We obtained some 16 factors that were felt to be similar enough in their factor loadings to be given the same titles for all three general practitioner samples:

Level of Medical Specialization
Group or Clinic Practice
Attainment in Publications
Participation in Professional Societies
Diagnostic Thoroughness
Keeping Abreast by Means of Journal Reading
Keeping Abreast by Means of Uncommon Techniques
Size of Medical Practice
Hospital Staff Recognition
Professional Stability
Late Attainment of M.D. Degree
Achievement in Education
Self-Evaluated Overall Professional Success
Unorthodox Success Image
Off-the-Job Socializing
Civic Participation

Thus, if we could be very liberal in our analysis we could say the following "types" of physicians are found in any large group of general practitioners (although any given physician could belong to more than one type): (1) a general practitioner who tends to specialize without obtaining all the extra training that is required for specialty certification, (2) a general practitioner who has established his practice in group or clinic setting rather than in an individual, private office, (3) a practitioner who has been quite active in medical research and expresses this activity through journal publications, (4) a practitioner who is quite active in scientific and professional societies, (5) a physician who is quite concerned with diagnoses and who exerts extra efforts in making them accurately, (6) a doctor who relies on professional journals as a primary source in keeping abreast, (7) another doctor who uses unorthodox or uncommon techniques, such as audio digests, a his method of keeping abreast, (8) a practitioner who has a large medical practice and little time for any other professional activities, (9) a physician who is quite active in his local hospitals and has been given some responsible positions in them, (10) a doctor who quickly established his practice in a given locality and has not changed his area of practice since then, (11) a general practitioner who obtained his medical degree rather late in life, (12) a physician who has achieved well in his medical schooling but has not made any particularly noteworthy contributions since that time, (13) a physician who rates himself as a success but shows little evidence to justify it,

(14) a physician who thinks the way to success in medicine is not to follow orthodox pathways to success, (15) a general practitioner who enjoys and actively participates in social events, and (16) another physician who is quite active in civic affairs.

In our studies of the Combined Sample and the Urban Sample, we found the following six factors in both of them, but not in the Rural Sample:

Medical Charity Work
Established Medical Practice
Quantity of Hospital Responsibilities
Self-Evaluated Contributions to Medicine
Self-Evaluated Contributions to Society
Interviewer's Rating of Likeability

In addition, the following three factors were found only in the Urban Sample:

Scientific Orientation Towards Medical Diagnoses
Professional Mobility
Professional Society Memberships---Leisure Planning

Finally, the following three factors were found in both the Urban Sample and the Rural Sample, but not in the Combined Sample:

Availability to Patients
Willingness to Provide Special Attention to Patients
Keeping Abreast by Means of Drug Detail Men

In general, then, we could say that in addition to the 16 types of physicians that were found to be common to all types of general practitioners, the urban general practitioner population has at least the following 12 other types of physicians: (1) one which is quite active in medical charity work, (2) a physician who has developed his practice over the years to the point that he can now restrict it and devote more of his energies to other activities, (3) a physician who has numerous hospital responsibilities, (4) a practitioner who believes he has made some worthy contributions to medicine, (5) another doctor who believes he has made a few significant contributions to society, (6) a physician who relies heavily on laboratory techniques in making his diagnoses, (8) a doctor who tends to move from one locality to another at comparatively frequent intervals, (9) a doctor who belongs to many professional societies and takes considerable time, comparatively, for leisure activities, (10) a general practitioner who makes himself available to his patients at nearly any time, night or day, (11) a physician who is willing to take time to provide extra or special attention to his patients when they indicate a need for it, and (12) a physician who relies heavily on drug detail men to keep himself informed of developments in medicine.

For the Rural Sample (but not the Urban Sample), these 5 factors were found to be similar to their companion factors in the Combined Sample:[13]

Medical Consulting
Keeping Abreast by Means of Refresher Courses
Amount of Malpractice Insurance Carried
Satisfaction from Interpersonal Relations
Leisure Planning

Also, the following 4 factors were obtained with only the Rural Sample:

Overall Occupational Satisfaction
Psychosomatic Orientation
Country Practitioner
Socio-Economic Level of Patients

Finally, the following 3 factors were found in both the Urban and Rural Samples but not the Combined Sample:

Availability to Patients
Willingness to Provide Special Attention to Patients
Keeping Abreast by Means of Drug Detail Men

Thus, at least these following 12 types of physicians are typical or rural general practitioners: (1) a physician who relies heavily on the advice and opinions of other doctors, (2) a doctor who relies heavily on professional society refresher courses in keeping abreast of developments in medicine, (3) a physician who carries considerable amounts of malpractice insurance, (4) a doctor who derives considerable satisfaction from interpersonal relations, (5) a general practitioner who plans and takes a comparatively large amount of time away from his practice to enjoy leisure activities, (6) a physician who enjoys nearly all phases of his medical activities and practice,

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[13] The interested reader will note that two of the factors for the Combined Sample did not appear in either the Urban or Rural Samples. These were Factor I (Emphasis on Medical Equipment) and Factor T (Keeping Abreast by Means of Professional Society Courses).

(7) one who places heavy emphasis upon psychological or psychosomatic factors as causal agents in physical illnesses and complaints, (8) a physician who typifies the old country doctor in his medical practice, (9) a practitioner who tends to cater to patients of upper socio-economic levels, (10) a general practitioner who makes himself available to his patients at nearly any time, day or night, (11) a physician who is willing to take time to provide extra or special attention to his patients when they indicate a need for it, and (12) a doctor who relies heavily on trug detail men to keep himself informed of developments in medicine.

A third general finding, in addition to that of the complexity of general practitioner performance and the organization within this complexity, is also one which has been repeated throughout this report. In all three of the studies reported in this chapter, academic achievement failed to show a strong or consistent relationship to the vast majority of the numerous measures of on-the-job performance which were collected and analyzed. In each factor analysis of the data, academic achievement (i.e., student performance) came out as a separate and independent dimension, essentially unrelated to our large set of measures of physician performance. Alternately, an examination of the intercorrelation matrices for these three studies shows that most of the 77 measures of physician performance were inter-related with some of the other physician performance measures, whereas the three indices of academic performance were only related to each other. For example, with Combined Sample, each of the criterion measures intercorrelated significantly, with three other criterion measures (4 of them correlated significantly with at least 10 of the criterion measures). However, both undergraduate grades and grades for the last two years of medical school failed to correlate significantly with a single criterion measure of physician performance. Grades achieved during the first two years of medical school correlated significantly with only two of the criterion measures of later physician performance. Moreover, these two significant correlations (-.20 and -.21) were both negative in direction and just barely reached our significance cutoff level of .20. Overall, when averaged across its three measures, academic achievement related to less than one of the 77 on-the-job criterion measures. Obviously, if such results for school grades continue to appear, and our data have certainly been consistent in this regard, considerable critical thought should be given to the present tendency to place such heavy weight on such an "academic" index of "accomplishment" and "potential."

# Table X

### Title and Source for Each Variable for:
### Urban General Practitioner Sample
### Rural General Practitioner Sample
### Combined Urban and Rural General Practitioner Sample

| | Title | Source |
|---|---|---|
| 1. | Number of Nominations as Preferred Consultant by General Practitioner Colleagues | Colleagues |
| 2. | Number of Different Internship and Residency Hospitals | Compendiums |
| 3. | Number of Years Spent in Internship and Residency | Compendiums |
| 4. | Mobility Rate in Professional Positions Since Receiving M.D. | Interview and Official Records |
| 5. | Total Number of Listings in Honorary Compendiums | Compendiums |
| 6. | Gross Income from Medical Profession | Interview |
| 7. | Number of Current Memberships in Scientific and Professional Societies | Interview |
| 8. | Average Judged Quality of Societies in Which Membership is Current | Interview and Expert Judges |
| 9. | Overall Occupational Satisfaction | Questionnaire |
| 10. | Self-Reported Number of Contributions Made to Medicine | Interview |
| 11. | Average Judged Quality of Self-Reported Contributions Made to Medicine | Interview and Expert Judges |
| 12. | Self-Reported Number of Non-Medical Contributions to Society | Interview |
| 13. | Total Number of Papers Presented at Scientific and Professional Meetings During Career | Interview |
| 14. | Total Number of Publications | Interview and Compendiums |
| 15. | Level of Participation in Medical Research | Interview |
| 16. | Number of Scientific and Professional Journals Reviewed Regularly | Interview |
| 17. | Number of Subscriptions to Scientific and Professional Journals | Interview |
| 18. | Number of Articles in Scientific and Professional Journals Read in Detail Each Month | Interview |
| 19. | Average Number of National and Regional Society Meetings Attended Annually | Interview |
| 20. | Average Number of State, County, and City Society Meetings Attended Annually | Interview |
| 21. | Total Number of Offices Held in Scientific and Professional Societies During Career | Interview and Compendiums |
| 22. | Number of Postgraduate Courses Taken During Career | Interview |
| 23. | Number of Refresher Courses Taken During Career | Interview |
| 24. | Number of Scientific and Professional Society Courses Taken During Career | Interview |
| 25. | Physician's Evaluation of Usefulness of Drug Detail Men | Interview |
| 26. | Extent of Physician's Experimental Use of Drugs Provided by Drug Detail Men | Interview |
| 27. | Number of Techniques Other Than Journals, Meetings, and Drug Detail Men Used in Keeping Abreast | Interview |
| 28. | Percentage of Patients on Which Consultations are Requested | Interview |
| 29. | Average Number of Patients Referred to Colleagues Per Month | Interview |
| 30. | Average Number of Patients Referred to Physician Per Month | Interview |
| 31. | Number of Patients Scheduled Per Hour | Interview |
| 32. | Proportion of Working Time Spent with Patients | Interview |
| 33. | Proportion of Patients Requiring Excessive Time to Explain Diagnosis | Interview |
| 34. | Proportion of Patients Requiring Laboratory Work | Interview |
| 35. | Proportion of Patients Requiring Laboratory Work Outside Physician's Office Building | Interview |
| 36. | Laboratory Facilities Within Physician's Office Building or Not | Interview |
| 37. | Proportion of Office Patients Treated Without Charge | Interview |
| 38. | Proportion of Office Patients Treated at a Reduced Rate | Interview |
| 39. | Average Number of Hours Per Week Spent in Treating Charity Patients Outside Office | Interview |
| 40. | Self-Estimated Average Socioeconomic Level of Patients | Interview |
| 41. | Degree to Which Physician Adheres to Patient Appointment Schedule | Interview |
| 42. | Average Number of House Calls Made Per Week | Interview |
| 43. | Average Number of Emergency Office or Hospital Calls Made Per Week | Interview |
| 44. | Degree to Which Physician Considers Psychological Factors in Diagnoses | Interview |
| 45. | Average Number of Hours Per Week Devoted to Medical Practice | Interview |
| 46. | Average Number of Hospitalized Patients | Interview |
| 47. | Number of Hospitals in Which Physician Works | Interview |
| 48. | Average Judged Quality of Hospitals in Which Physician Works | Interview and Expert Judges |
| 49. | Number of Hospitals in Which Physician Maintains Courtesy Priviledges | Interview |
| 50. | Average Judged Quality of Hospitals in Which Physician Maintains Courtesy Priviledges | Interview and Expert Judges |
| 51. | Number of Formal Responsibilities Physician Has in Hospitals | Interview |
| 52. | Self-Estimated Value of Office Equipment | Interview |
| 53. | Number of Nurses on Physician's Ancillary Staff | Interview |
| 54. | Number of Clerical, Administrative, and Janitorial Workers on Physician's Ancillary Staff | Interview |
| 55. | Extent to Which Physician Limits Size of Practice | Interview |
| 56. | Self-Reported Satisfaction with Size of Practice | Interview |
| 57. | Amount of Malpractice Insurance Carried | Interview |
| 58. | Average Number of Speeches on Medical Topics to Laymen Groups Per Year | Interview |
| 59. | Average Number of Speeches on Non-Medical Topics to Laymen Groups Per Year | Interview |
| 60. | Average Amount of Vacation Taken Annually | Interview |
| 61. | Extent to Which Physician Plans and Maintains Leisure Time Activities | Interview |
| 62. | Number of Current Memberships in Social and Avocational Organizations | Interview |
| 63. | Number of Offices Held in Social and Avocational Organizations | Interview |
| 64. | Number of Current Memberships in Civic and Political Organizations | Interview |
| 65. | Number of Offices Held in Civic and Political Organizations | Interview |
| 66. | Number of Church Activities in Which Physician Engages | Interview |
| 67. | Characteristics Physician Considers Important for Success in Medicine: Number of "Common" Responses | Interview |
| 68. | Characteristics Physician Considers Important for Success in Medicine: Number of "Uncommon" Responses | Interview |
| 69. | Characteristics Physician Considers Important for Success in Medicine: "Commonness" or Responses Elicited | Interview |
| 70. | Self-Rating of Success in Medicine | Interview |
| 71. | Interviewer Rating of Condition of Physician's Office | Project Interviewer |
| 72. | Interviewer Rating of Likeability | Project Interviewer |
| 73. | Interviewer Rating of Physician's Involvement in This Project | Project Interviewer |
| 74. | Age at Which Received M.D. | Control Variable |
| 75. | Years of Experience Since Receiving M.D. | Control Variable |
| 76. | Individual Practice Rather Than Group, Clinic or Hospital Practice | Control Variable |
| 77. | General Practice with Specialty Rather Than General Practice Without Specialty | Control Variable |
| 78. | Undergraduate Grade Point Average | Official Transcripts |
| 79. | Grade Point Average for First Two Years of Medical School | Official Transcripts |
| 80. | Grade Point Average for Last Two Years of Medical School | Official Transcripts |

# Table XII

Intercorrelations of Variables for Combined Urban and Rural General Practitioner Sample

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | -05 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 11 | 33 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 08 | 08 | 10 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 02 | 04 | 04 | 16 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 13 | -16 | -05 | -06 | 10 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 01 | 02 | -03 | 01 | 12 | 10 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 08 | 07 | -04 | 18 | 17 | 04 | 38 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 10 | 01 | 01 | 03 | 12 | 04 | -01 | 06 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | -07 | 09 | 00 | -06 | 10 | 03 | 05 | 10 | 05 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | -04 | 09 | 10 | 03 | 21 | 07 | 15 | 20 | 03 | 33 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 12 | -07 | -07 | 01 | -03 | 11 | 12 | -02 | 11 | -03 | -02 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 03 | 09 | 11 | 09 | 25 | 01 | 22 | 18 | 00 | 13 | 20 | 05 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 06 | 08 | 07 | 05 | 16 | 04 | 05 | 10 | 06 | -02 | 07 | -01 | 03 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | -06 | 20 | 25 | 21 | 12 | -06 | 00 | 13 | 00 | -02 | 21 | -13 | 22 | 13 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 00 | -07 | -05 | 01 | 01 | 02 | 05 | 02 | 17 | 04 | 06 | 11 | 18 | 06 | 26 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 04 | 04 | -03 | 05 | -08 | -05 | 14 | 00 | 04 | -04 | 04 | 09 | 07 | 10 | 22 | 52 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 02 | -03 | -03 | 08 | -06 | -07 | 02 | 02 | 12 | 00 | 15 | -04 | 21 | 12 | 18 | 40 | 25 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | 12 | 01 | 04 | 07 | 05 | 16 | 15 | 23 | 06 | 09 | 11 | 02 | 31 | -07 | 12 | 12 | 07 | 13 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 07 | -03 | -01 | -07 | -08 | 03 | 16 | 04 | 05 | -03 | 00 | 08 | 10 | -01 | 00 | 14 | 18 | 05 | 12 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 05 | -04 | -20 | -02 | 03 | 17 | 38 | 01 | 01 | 03 | 04 | 11 | 05 | -03 | -06 | 08 | 18 | 08 | 06 | 23 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | 03 | -15 | -07 | 00 | 02 | 16 | 19 | 11 | 01 | 03 | -02 | 13 | 09 | 00 | -06 | 04 | 10 | 07 | 19 | 07 | 19 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | -02 | 06 | -10 | -03 | 10 | 01 | 11 | -03 | 04 | -02 | -04 | -01 | 10 | 03 | -17 | -09 | -08 | -08 | 15 | -02 | 11 | -04 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 10 | 06 | 02 | 03 | 02 | -03 | 14 | 13 | 09 | 01 | -02 | 06 | 05 | -02 | 02 | 06 | 10 | -05 | 16 | 13 | 04 | 04 | 08 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | -06 | 01 | -14 | -03 | -11 | 00 | -07 | -08 | 04 | 01 | -02 | 03 | -14 | -02 | -16 | -02 | -04 | -02 | -11 | 04 | 03 | -03 | 08 | -07 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | 04 | -04 | 07 | 00 | 00 | 18 | 04 | 06 | -04 | 13 | -02 | -03 | 09 | 02 | 12 | 03 | -08 | 09 | 14 | -12 | 00 | 00 | 15 | 07 | 04 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 06 | 08 | 01 | 09 | 01 | 09 | 02 | 04 | -02 | 06 | 04 | 06 | 11 | -02 | -01 | 04 | -05 | 09 | 08 | -05 | 05 | 19 | 03 | 08 | 12 | 01 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 10 | 09 | 06 | 00 | 03 | 08 | 01 | 03 | 03 | 07 | -03 | 08 | -07 | 01 | 00 | -02 | -12 | 06 | 07 | -05 | -01 | 05 | 06 | 04 | -06 | 03 | 06 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 12 | 02 | -06 | 04 | 08 | 13 | 01 | 00 | 06 | 11 | -04 | -09 | 01 | 12 | 10 | 03 | -08 | 06 | 08 | 00 | 02 | 04 | 11 | 05 | 03 | 05 | -02 | 11 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 11 | 18 | 41 | 15 | 10 | 03 | 09 | 32 | -14 | 11 | 18 | -14 | 13 | 14 | 31 | -02 | 02 | 03 | 17 | -03 | -04 | -02 | -24 | 04 | -23 | 14 | -04 | 04 | -01 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | 00 | -05 | -03 | 02 | -04 | 20 | 02 | -01 | 01 | 03 | 08 | -12 | -13 | -07 | 01 | -07 | -03 | 02 | -01 | 05 | 02 | 09 | 04 | 11 | 08 | 06 | 02 | -09 | 17 | -07 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | 10 | 01 | 02 | 00 | 01 | 14 | 01 | -05 | 07 | -03 | -07 | -05 | -14 | 08 | 00 | -14 | 00 | -03 | -06 | -01 | -01 | 01 | 00 | 03 | 00 | 08 | 07 | -07 | 06 | 02 | 10 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | -05 | -06 | 03 | -06 | -05 | 02 | -02 | -12 | 06 | -02 | 09 | -04 | -04 | -06 | 01 | -08 | 06 | -03 | 02 | -03 | -01 | -10 | -04 | -11 | -10 | -03 | -12 | -05 | -06 | -10 | -04 | 02 | -- | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | 01 | 12 | 11 | 11 | 12 | 04 | 05 | 01 | 04 | 08 | -02 | 08 | 17 | -01 | 10 | -01 | -03 | 00 | 03 | -07 | -02 | -01 | 04 | -06 | -09 | 02 | 01 | 15 | 14 | 07 | -13 | -08 | 07 | -- | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 12 | 10 | 03 | 02 | 03 | -01 | -04 | -11 | -03 | 02 | -04 | -01 | 00 | -02 | 12 | 01 | 15 | -10 | 06 | -03 | 05 | -05 | 09 | 06 | 08 | 08 | -06 | 01 | 08 | -01 | 08 | 01 | 11 | 24 | -- | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 13 | -05 | -03 | 11 | 07 | 13 | 05 | 01 | 02 | 08 | -05 | 08 | 10 | 04 | 02 | -04 | -04 | 12 | 07 | -06 | 09 | 00 | 09 | 00 | 07 | 13 | -05 | 01 | 26 | -02 | 12 | 00 | -15 | 19 | 04 | -- | | | | | | | | | | | | | | | | | | | | | | |
| 37 | 09 | 06 | -07 | -01 | 08 | 05 | -06 | -05 | -01 | 01 | 09 | 10 | 16 | -04 | 17 | 17 | 13 | 05 | 23 | 10 | 04 | 01 | -02 | 09 | 03 | 13 | 14 | 11 | 03 | 03 | 02 | -16 | -01 | 14 | 20 | 13 | -- | | | | | | | | | | | | | | | | | | | | | |
| 38 | -01 | 06 | -06 | -04 | -02 | -11 | -04 | 01 | -06 | -09 | 02 | -03 | -02 | -04 | -07 | -01 | 02 | -02 | 03 | 05 | 07 | -05 | -01 | -04 | -02 | -08 | -09 | -01 | -06 | -02 | -08 | 02 | -02 | -02 | 14 | 01 | 26 | -- | | | | | | | | | | | | | | | | | | | | |
| 39 | 07 | 14 | 16 | -02 | 11 | -06 | 01 | 05 | 07 | 04 | 02 | 03 | 16 | 06 | 20 | 17 | 13 | 06 | 18 | 17 | -04 | -05 | -12 | 04 | -07 | 09 | 02 | 16 | 00 | 34 | -13 | -12 | 07 | 23 | 15 | 00 | 25 | 05 | -- | | | | | | | | | | | | | | | | | | | |
| 40 | 02 | 04 | 07 | -14 | 09 | -03 | 02 | 01 | 07 | 14 | 07 | 09 | 04 | 10 | 01 | -06 | -06 | -04 | 03 | 04 | 12 | 02 | 08 | -04 | -09 | 05 | -05 | 11 | -03 | 04 | -10 | 09 | -01 | 07 | -07 | -01 | -05 | -10 | 05 | -- | | | | | | | | | | | | | | | | | | |
| 41 | 03 | 15 | 22 | 00 | 05 | 01 | -06 | 08 | -04 | 02 | 06 | -10 | 19 | 04 | 13 | 06 | 07 | 07 | 14 | 01 | -03 | 04 | -19 | 00 | -17 | 00 | 08 | 10 | -09 | 31 | -15 | 00 | -05 | 10 | 05 | -07 | 09 | -06 | 24 | 03 | -- | | | | | | | | | | | | | | | | | |
| 42 | 10 | -09 | -33 | -05 | -06 | 07 | 01 | -15 | 09 | -07 | -16 | 14 | -07 | 07 | -14 | 17 | 14 | 09 | -02 | 10 | 15 | -05 | 05 | 04 | 18 | 00 | -04 | -05 | 13 | -21 | 12 | 02 | -08 | -01 | 06 | 13 | 11 | 05 | 06 | -15 | -20 | -- | | | | | | | | | | | | | | | | |
| 43 | 05 | -08 | -16 | -10 | -10 | 14 | -11 | -15 | -10 | -07 | -05 | 05 | -15 | -04 | -05 | 00 | 00 | 11 | -04 | 11 | -01 | -11 | 00 | 02 | 11 | -02 | 05 | 01 | 20 | -18 | 31 | 01 | -06 | -12 | -02 | 15 | 07 | 02 | -01 | -13 | -17 | 28 | -- | | | | | | | | | | | | | | | |
| 44 | -02 | -03 | -10 | 07 | 04 | -02 | -05 | -11 | 01 | -03 | 00 | 10 | 03 | -01 | 08 | -01 | 02 | -01 | -04 | 02 | -09 | -04 | 06 | -07 | -05 | -06 | -03 | 05 | -05 | -05 | -13 | 08 | 18 | 02 | 00 | -10 | 03 | 07 | 11 | -06 | 12 | -02 | -08 | -- | | | | | | | | | | | | | | |
| 45 | 06 | -08 | -02 | -01 | 02 | 25 | 15 | 00 | -06 | -09 | -03 | 01 | 10 | -02 | 06 | 06 | 13 | 08 | 16 | 11 | 11 | 09 | 04 | 17 | -05 | 11 | -01 | 05 | 18 | 09 | 16 | 01 | -05 | 09 | 09 | 15 | 03 | 01 | 06 | -03 | 06 | 13 | 33 | -09 | -- | | | | | | | | | | | | | |
| 46 | 20 | 04 | 07 | 06 | 06 | 30 | 02 | 09 | -10 | -03 | 02 | -04 | 05 | 13 | 15 | -04 | 01 | -06 | 11 | 05 | 08 | 11 | -08 | -02 | 02 | 12 | 10 | 04 | 15 | 16 | 16 | 07 | -06 | 13 | 09 | 11 | 16 | 00 | 14 | -04 | 04 | 11 | 19 | -11 | 33 | -- | | | | | | | | | | | | |
| 47 | 08 | -07 | -01 | -06 | 09 | 09 | 01 | 05 | 01 | -04 | -04 | 04 | 01 | -05 | -03 | 02 | -10 | 00 | 07 | 06 | -06 | -03 | 11 | -03 | -02 | 18 | 07 | 12 | 07 | 13 | 00 | -13 | -06 | -03 | -02 | 15 | -06 | 05 | 13 | 06 | -02 | 02 | 14 | 03 | 20 | 06 | -- | | | | | | | | | | | |
| 48 | -04 | 18 | 21 | 04 | 12 | -09 | -01 | 22 | 02 | 12 | -03 | -18 | 14 | 07 | 10 | -07 | -23 | -18 | 06 | -06 | -20 | -07 | 11 | 01 | -14 | 03 | -07 | 22 | 09 | 18 | 13 | -09 | -03 | 23 | -05 | -09 | -05 | 03 | 11 | 17 | 20 | -14 | -23 | -02 | -03 | -12 | 02 | -- | | | | | | | | | | |
| 49 | -02 | 10 | 20 | 03 | 07 | -13 | -03 | 03 | 11 | 00 | -14 | 03 | 04 | -01 | 06 | 03 | 00 | -01 | 05 | -01 | -15 | -02 | -04 | 10 | -04 | -04 | -04 | 05 | 05 | -06 | -04 | -01 | -09 | 01 | -01 | 03 | -05 | -06 | -03 | 07 | 02 | 01 | -08 | 01 | -12 | -11 | -17 | 29 | -- | | | | | | | | | |
| 50 | -09 | 11 | 18 | 01 | 05 | -20 | -10 | -02 | 13 | 04 | -11 | 02 | 03 | 00 | 04 | 01 | -04 | 00 | 06 | -04 | -16 | -05 | 02 | 02 | -03 | -06 | -04 | 08 | 00 | -03 | -10 | -01 | -07 | 07 | 01 | 01 | -06 | 00 | 01 | 13 | 08 | -06 | -11 | 04 | -16 | -15 | -11 | 37 | 83 | -- | | | | | | | | |
| 51 | 23 | 17 | 13 | 01 | 13 | -02 | 09 | 02 | 04 | 00 | 09 | -03 | 00 | -05 | 03 | 00 | 04 | 00 | -03 | 11 | 03 | -10 | -02 | 09 | -15 | -02 | 02 | 06 | 05 | 22 | 13 | 02 | -10 | 06 | 14 | 10 | 04 | 01 | 11 | 07 | 24 | -03 | 00 | 00 | 19 | 12 | 18 | 08 | -05 | -07 | -- | | | | | | | |
| 52 | 07 | -13 | -05 | 12 | 14 | 14 | 02 | 02 | 03 | 37 | 01 | 19 | 03 | 03 | 01 | 13 | 06 | 10 | -07 | -08 | 01 | 13 | -04 | -06 | 06 | 05 | 17 | -10 | 04 | -01 | 15 | 02 | -08 | 01 | 00 | 23 | 07 | -12 | -08 | 04 | -13 | 07 | 05 | 07 | 07 | 12 | -02 | -22 | -10 | -06 | 10 | -- | | | | | | |
| 53 | -01 | 02 | -06 | 09 | 11 | 09 | -07 | 02 | 01 | 07 | 06 | 07 | -06 | 03 | 16 | 07 | 08 | -04 | 08 | -10 | -02 | 00 | 05 | 02 | 00 | 15 | 16 | 03 | 14 | -03 | 15 | -04 | -09 | -05 | 04 | 10 | 16 | 00 | 02 | 06 | 01 | 02 | 20 | -01 | 11 | 19 | 06 | -08 | -01 | -04 | 07 | 27 | -- | | | | | |
| 54 | 02 | 01 | -01 | 00 | 05 | 17 | 11 | 03 | 04 | 08 | -04 | 12 | 04 | 00 | -08 | -03 | -01 | -11 | 05 | 00 | -05 | 05 | 02 | -14 | 06 | 07 | 22 | -02 | 11 | 00 | 05 | 04 | 01 | -06 | -01 | 07 | 03 | -04 | -01 | -07 | -04 | -05 | 14 | 01 | 07 | 19 | 03 | -09 | 01 | -04 | 13 | 15 | 14 | -- | | | | |
| 55 | 04 | -02 | -07 | -10 | -05 | 13 | 06 | 07 | 01 | 15 | 07 | 02 | 02 | 08 | 10 | -01 | 09 | -02 | 03 | 04 | 15 | 11 | 02 | 03 | -10 | 18 | -02 | 11 | 09 | 06 | 02 | 05 | -01 | 02 | 04 | -04 | 08 | -10 | 00 | 16 | 17 | 00 | -09 | 03 | -03 | 11 | 00 | 10 | -06 | [illegible] | -01 | -03 | -05 | 00 | -- | | | |
| 56 | -02 | -05 | -12 | -08 | 02 | 27 | 13 | 02 | -01 | 05 | -04 | 08 | 05 | -04 | 12 | 03 | 03 | -10 | 07 | 09 | 10 | 15 | 08 | -04 | 05 | 16 | -03 | -04 | 18 | -07 | 13 | 02 | -02 | -02 | 06 | 13 | 10 | -06 | 00 | 12 | -18 | 09 | 14 | 01 | 27 | 35 | 02 | -09 | -12 | -14 | 04 | 16 | 09 | 23 | 27 | -- | | |
| 57 | 21 | 00 | 04 | 06 | 05 | 15 | 15 | 17 | -17 | 03 | 08 | 02 | 12 | -03 | 08 | -03 | 06 | 09 | 16 | -01 | 02 | 09 | -12 | 01 | -08 | 09 | 08 | -03 | 06 | 16 | 11 | 09 | -03 | -03 | -03 | 19 | 06 | -12 | -04 | 04 | 00 | -06 | 12 | 01 | 06 | 12 | -01 | -06 | -07 | -14 | 06 | 22 | 12 | 13 | -02 | 06 | -- | |
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| 59 | 08 | -13 | -16 | -04 | -05 | 22 | -03 | -13 | 06 | -02 | -11 | 26 | -10 | -06 | -08 | 17 | 13 | 05 | 08 | 06 | 10 | 11 | 04 | 09 | 08 | 12 | 11 | 03 | 00 | -15 | 06 | 00 | -04 | 03 | 06 | 06 | 15 | -01 | 02 | 07 | -04 | 25 | 10 | 04 | 03 | 06 | -01 | -25 | -10 | -11 | -13 | 17 | 09 | -01 | 03 | 13 | 08 | 32 |
| 60 | 13 | -09 | -05 | 09 | 02 | -01 | 12 | 25 | 16 | -02 | -07 | 02 | 04 | 07 | 03 | 03 | -06 | 04 | 04 | 08 | 02 | 06 | 07 | 12 | 02 | 04 | 04 | 13 | 14 | 02 | 05 | 06 | 04 | -16 | -09 | -02 | 04 | -01 | -02 | 02 | 03 | -11 | -11 | 05 | -08 | 07 | 06 | 14 | 06 | 04 | 01 | 02 | 14 | 00 | 10 | 04 | 01 | -10 |
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| 62 | 06 | -08 | 02 | 01 | 02 | 21 | 19 | 14 | 02 | 11 | 10 | 15 | 07 | 11 | 02 | 06 | 01 | -06 | 18 | 08 | 14 | 10 | -02 | 07 | 01 | 13 | 01 | 09 | 08 | 05 | 02 | -01 | -01 | 07 | 02 | 00 | 00 | -07 | 02 | 10 | 02 | 01 | 03 | 02 | 08 | 10 | 13 | -02 | -01 | -05 | 00 | 05 | 13 | -01 | 08 | 10 | 05 | 06 |
| 63 | 10 | -04 | -01 | -05 | -14 | 08 | -08 | -12 | -14 | 08 | 01 | 18 | -01 | -09 | -08 | 03 | 06 | -10 | -02 | 14 | 05 | 03 | -02 | -06 | 06 | 00 | -03 | 01 | -04 | -05 | 02 | -07 | 07 | 02 | 10 | 07 | 05 | -14 | 01 | 04 | 06 | -06 | 14 | -03 | 00 | 01 | 04 | -18 | -03 | -09 | 05 | 04 | 06 | -02 | -03 | 12 | 01 | 10 |
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| 66 | 03 | 05 | 05 | -18 | 07 | -06 | 11 | -08 | -10 | 01 | 09 | 13 | 07 | -01 | -08 | -05 | 00 | -05 | 09 | 13 | 17 | -01 | 03 | 03 | -01 | 06 | -04 | 17 | 03 | -06 | -05 | 00 | 00 | 01 | 02 | 04 | 05 | 12 | 17 | 18 | 06 | 04 | 08 | 10 | 09 | -09 | 07 | 03 | -02 | -02 | 07 | -13 | -06 | 02 | -02 | -03 | 00 | 19 |
| 67 | 10 | 02 | 02 | -06 | 11 | 07 | 02 | 19 | -04 | 00 | -05 | -01 | 08 | 15 | -07 | 08 | 03 | -11 | 08 | -06 | 00 | 10 | 03 | 12 | -02 | -10 | 02 | 10 | 03 | 16 | -13 | -02 | -17 | -04 | 03 | 08 | -09 | 03 | 05 | 35 | 02 | 02 | -03 | -12 | 07 | 17 | 05 | 17 | -05 | -09 | 06 | -05 | 02 | 02 | -06 | -05 | 07 | -02 |
| 68 | -11 | 02 | 03 | -13 | -10 | -04 | -01 | -18 | -10 | 00 | -07 | 14 | -02 | 02 | 05 | 07 | 12 | 09 | -03 | 08 | -01 | -16 | -06 | -05 | -08 | -03 | -02 | -08 | -04 | 00 | 08 | -07 | 07 | -01 | -04 | 06 | 10 | -07 | 01 | 03 | 04 | 03 | 07 | 05 | 10 | -02 | 09 | -18 | 04 | 07 | 06 | 02 | -01 | 07 | 02 | 05 | -09 | 06 |
| 69 | 16 | -01 | -02 | -06 | 00 | 09 | 00 | 04 | -05 | -08 | -08 | 01 | -04 | 12 | -05 | 07 | 02 | 00 | -05 | -04 | 04 | 09 | -08 | 08 | 06 | -08 | 02 | 06 | 05 | 08 | -03 | 10 | -15 | -16 | -03 | -02 | -14 | 01 | -02 | 03 | -04 | 09 | 06 | -12 | 05 | 14 | -01 | 00 | -03 | -10 | 04 | 04 | 04 | -03 | -06 | -04 | 09 | 13 |
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| 74 | -08 | 02 | -09 | -05 | -06 | -17 | 02 | -09 | -01 | 12 | -05 | 12 | 01 | -02 | -05 | 05 | 09 | -11 | 00 | -01 | -02 | -08 | 03 | 12 | 19 | -01 | 00 | -02 | -11 | -02 | -12 | -03 | -02 | -10 | -03 | -07 | -02 | -08 | 11 | 04 | -04 | 00 | -04 | 03 | -03 | -15 | 02 | 00 | -06 | -03 | 01 | -05 | 05 | 04 | 00 | 03 | -05 | 15 |
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| 78 | -09 | -01 | -19 | 00 | 02 | -10 | -06 | -04 | 01 | 06 | 05 | -11 | -01 | 05 | -01 | 09 | 01 | 07 | -02 | -03 | -01 | 03 | 02 | -06 | -02 | 06 | -11 | -10 | 13 | -03 | 13 | -04 | -17 | 06 | -05 | 07 | 01 | 08 | -02 | 07 | -02 | -03 | 05 | -11 | -02 | -04 | 01 | 02 | -09 | -02 | -03 | 01 | -02 | -01 | 02 | 11 | 03 | -04 |
| 79 | -09 | -01 | -20 | -01 | 02 | -04 | -06 | -02 | 04 | 07 | 07 | -10 | 03 | 05 | 03 | 09 | 02 | 09 | -02 | -05 | 00 | 00 | 03 | -04 | -06 | 07 | -08 | -07 | 17 | 01 | 09 | -06 | -13 | 08 | -05 | 09 | 03 | 04 | -03 | 05 | -03 | 02 | 05 | -15 | -01 | 02 | 01 | 02 | -10 | -06 | -01 | -01 | -03 | 02 | 09 | 11 | 04 | -06 |
| 80 | -08 | -06 | -16 | 03 | 08 | -08 | -02 | -07 | 03 | -01 | -03 | -07 | 03 | -01 | -10 | 01 | -05 | 01 | 02 | -03 | 00 | 02 | 02 | -03 | -01 | 07 | -07 | -04 | 04 | -05 | 12 | 06 | -17 | 08 | -01 | 07 | 01 | 14 | 05 | 14 | 02 | -03 | -01 | -04 | -02 | -04 | 06 | 02 | -07 | -01 | -02 | 04 | 00 | -03 | -03 | 14 | -01 | 01 |

| Variables | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | -21 | -- | | | | | | | | | | | | | | | | | | | | |
| 61 | -13 | 24 | -- | | | | | | | | | | | | | | | | | | | |
| 62 | 03 | 13 | 01 | -- | | | | | | | | | | | | | | | | | | |
| 63 | 10 | -07 | -09 | 31 | -- | | | | | | | | | | | | | | | | | |
| 64 | 32 | 03 | -06 | 17 | 14 | -- | | | | | | | | | | | | | | | | |
| 65 | 23 | 07 | 10 | -06 | 14 | 53 | -- | | | | | | | | | | | | | | | |
| 66 | 05 | -10 | -04 | 00 | -04 | -02 | 03 | -- | | | | | | | | | | | | | | |
| 67 | -04 | 02 | 01 | 01 | -12 | 00 | -03 | -04 | -- | | | | | | | | | | | | | |
| 68 | 04 | -02 | -06 | -05 | 06 | -01 | 11 | 02 | -31 | -- | | | | | | | | | | | | |
| 69 | 04 | -03 | 05 | 05 | -01 | 03 | 02 | -07 | 62 | -38 | -- | | | | | | | | | | | |
| 70 | 10 | -03 | -06 | 08 | 08 | 05 | -05 | -04 | 01 | -04 | -05 | -- | | | | | | | | | | |
| 71 | 10 | -02 | -11 | 09 | -08 | 10 | 01 | 11 | 06 | -06 | 05 | 04 | -- | | | | | | | | | |
| 72 | -08 | 00 | 00 | 06 | 03 | 05 | 07 | -11 | 02 | 10 | 04 | -04 | 16 | -- | | | | | | | | |
| 73 | 12 | -02 | 09 | 09 | 04 | 04 | 10 | 03 | 04 | -01 | 15 | -07 | 18 | 36 | -- | | | | | | | |
| 74 | 08 | -12 | -05 | 02 | 06 | 08 | 08 | 09 | 05 | 00 | 00 | -01 | -13 | 07 | 02 | -- | | | | | | |
| 75 | 06 | 22 | 08 | 19 | 02 | 14 | -01 | -16 | 05 | -21 | 03 | 10 | -09 | -09 | -18 | -11 | -- | | | | | |
| 76 | 01 | -14 | -07 | 15 | 13 | 02 | -16 | -07 | -14 | -02 | -02 | -02 | -16 | 02 | -04 | -07 | 24 | -- | | | | |
| 77 | -22 | 07 | 07 | 06 | -12 | -16 | -21 | 11 | 14 | -01 | 00 | -03 | 10 | 03 | 03 | -03 | -21 | -16 | -- | | | |
| 78 | 01 | -04 | -08 | -18 | -06 | -06 | -12 | -02 | 06 | -03 | 01 | 06 | 04 | 05 | -06 | 03 | 10 | 06 | -16 | -- | | |
| 79 | 06 | -04 | -14 | -21 | -06 | 00 | -10 | -05 | 10 | -02 | 02 | 08 | 08 | 02 | -10 | 00 | 12 | 04 | -16 | 92 | -- | |
| 80 | 00 | -01 | -01 | -12 | -06 | -10 | -12 | 04 | 02 | -04 | -03 | 06 | 00 | 07 | -05 | 05 | 09 | 05 | -13 | 83 | 66 | -- |

Note: Decimals have been omitted

## Table XIII

### Eigenvalues and Cumulative Proportion of Variance Accounted for For Combined Urban and Rural General Practitioner Sample Unrotated Factors

| Factor | Eigenvalue | Cumulative Proportion Of Variance |
|---|---|---|
| A | 4.68 | .08 |
| H | 4.46 | .16 |
| DD | 3.28 | .22 |
| V | 2.92 | .27 |
| R | 2.81 | .32 |
| K | 2.42 | .36 |
| BB | 2.36 | .41 |
| I | 2.30 | .45 |
| Y | 2.13 | .48 |
| W | 1.85 | .52 |
| J | 1.80 | .55 |
| M | 1.73 | .58 |
| Z | 1.67 | .61 |
| X | 1.58 | .64 |
| S | 1.56 | .67 |
| D | 1.55 | .69 |
| E | 1.51 | .72 |
| CC | 1.46 | .75 |
| AA | 1.40 | .77 |
| P | 1.37 | .79 |
| Q | 1.34 | .82 |
| C | 1.29 | .84 |
| N | 1.25 | .86 |
| L | 1.19 | .88 |
| B | 1.15 | .90 |
| G | 1.13 | .92 |
| O | 1.09 | .94 |
| F | 1.08 | .96 |
| U | 1.05 | .98 |
| T | 1.03 | 1.00 |

# Table XIV

## Unrotated Factor Matrix and Communalities
## For Combined Urban and Rural General Practitioner Sample

| Variables | Factors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | $h^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC | DD | |
| 1 | -07 | 07 | -16 | 12 | -08 | 18 | -12 | 32 | -16 | -09 | -09 | 20 | 19 | 26 | -14 | 02 | 03 | -11 | 18 | 05 | -11 | 07 | 08 | 27 | -14 | 06 | -24 | -15 | 12 | 12 | 69 |
| 2 | 35 | 10 | -03 | 21 | 26 | 00 | -09 | 13 | -06 | -11 | 09 | -06 | -29 | -11 | -26 | 04 | -19 | 06 | 00 | 09 | -11 | -17 | -10 | 07 | 06 | -01 | 00 | -07 | -10 | 08 | 60 |
| 3 | 55 | -02 | -11 | 12 | 08 | -09 | -05 | 24 | 07 | 05 | 00 | -23 | -10 | 06 | 06 | 01 | -17 | -07 | -04 | 04 | -22 | -08 | 11 | 18 | -04 | 14 | -03 | 00 | 10 | 23 | 71 |
| 4 | 13 | 18 | -06 | 03 | -11 | -12 | -09 | 18 | 33 | -26 | 11 | 17 | -10 | -18 | 08 | -11 | 06 | -01 | 15 | 14 | 02 | 01 | -10 | 25 | -11 | 06 | 30 | -16 | 15 | -02 | 67 |
| 5 | 15 | -13 | 07 | 26 | -16 | 22 | 16 | 26 | 00 | -22 | 17 | -08 | 08 | -15 | 15 | -31 | -10 | -02 | -15 | -02 | 12 | 12 | -21 | -08 | 02 | -06 | -01 | -06 | 09 | -18 | 67 |
| 6 | -34 | 04 | 11 | 03 | -06 | 09 | 12 | 37 | 00 | -04 | -05 | -23 | 14 | 04 | 02 | -11 | -10 | -22 | -05 | 02 | -08 | 19 | 21 | 00 | -15 | 03 | -02 | 25 | -08 | -05 | 63 |
| 7 | -06 | 10 | -09 | 18 | 06 | -13 | 04 | 34 | -02 | 20 | -10 | -03 | -07 | -03 | 05 | -02 | 01 | 10 | 00 | -05 | 08 | 43 | -37 | -07 | 13 | 18 | 15 | 07 | -02 | -06 | 68 |
| 8 | 29 | 15 | -05 | -11 | 04 | -05 | 13 | 38 | 14 | 07 | -10 | -07 | -08 | -03 | 09 | 03 | 00 | -07 | -01 | -02 | -12 | 40 | -22 | 08 | 00 | 03 | 00 | -11 | 11 | -16 | 63 |
| 9 | -05 | 14 | 25 | 21 | -09 | -21 | 19 | 00 | -02 | 00 | 33 | 10 | 08 | 29 | -05 | -12 | -15 | 14 | -05 | -01 | -25 | 21 | -04 | 18 | -11 | -22 | -09 | -18 | 06 | -05 | 73 |
| 10 | 07 | 14 | 01 | -02 | -04 | 06 | 14 | 19 | 06 | -02 | 22 | 11 | -30 | 21 | 04 | -04 | 07 | 02 | -35 | 10 | 04 | 07 | 06 | -14 | 29 | -12 | -25 | 15 | -07 | -12 | 65 |
| 11 | 13 | 04 | 14 | 12 | -10 | 07 | 04 | 26 | 30 | -04 | -08 | 02 | -17 | -17 | -02 | -12 | -08 | 16 | -30 | 12 | -07 | 07 | -14 | 01 | 23 | -12 | -40 | 15 | -11 | -07 | 73 |
| 12 | -31 | 05 | -08 | 07 | 01 | 06 | 08 | 11 | -10 | -03 | 24 | -06 | 16 | 00 | 09 | 02 | 00 | 13 | 17 | 18 | -11 | 21 | 06 | -12 | 25 | 12 | -05 | -10 | 27 | 28 | 63 |
| 13 | 18 | -11 | 00 | -12 | -13 | 24 | -24 | 35 | 09 | -11 | 06 | -07 | -07 | 05 | -09 | -15 | -23 | 36 | 00 | -17 | 13 | 21 | -13 | -19 | 03 | 16 | 00 | 04 | 06 | -10 | 74 |
| 14 | 09 | 09 | -20 | 31 | -05 | 17 | -12 | 15 | 01 | 06 | 00 | -32 | 08 | -14 | -14 | 09 | -09 | 02 | -13 | 37 | 07 | 05 | 07 | -12 | -11 | -31 | 10 | -21 | 04 | -09 | 74 |
| 15 | 30 | -05 | 05 | 06 | 12 | -02 | -16 | 38 | 32 | -01 | 06 | 09 | -02 | -21 | 11 | 13 | -02 | 26 | -13 | -06 | -02 | -16 | 07 | 00 | -22 | -20 | 13 | 02 | 00 | 02 | 70 |
| 16 | -13 | -10 | 07 | -07 | -09 | -02 | 09 | 18 | 17 | 11 | 03 | 05 | -02 | 09 | -05 | 00 | 01 | 56 | -03 | -11 | -08 | 08 | 18 | -19 | -15 | -20 | 04 | -21 | 06 | 04 | 71 |
| 17 | -15 | -07 | -02 | 18 | 15 | -09 | -03 | 14 | 15 | 14 | -16 | 07 | -03 | 05 | -10 | -06 | 16 | 56 | -09 | 00 | -07 | 00 | 05 | -13 | -15 | -02 | 17 | -22 | 03 | 18 | 70 |
| 18 | -04 | -01 | -05 | -02 | -43 | -15 | -11 | 15 | 33 | 23 | 03 | 06 | 04 | 06 | -17 | 13 | -07 | 38 | 01 | -02 | 02 | -05 | 01 | -06 | -18 | -04 | -10 | -21 | -25 | -01 | 77 |
| 19 | 04 | 01 | 07 | -40 | -03 | 03 | -11 | 41 | -12 | -02 | 03 | -05 | 05 | 07 | -05 | -12 | 01 | 26 | -15 | -02 | -21 | 17 | -11 | 06 | -10 | 18 | 01 | 06 | -07 | -05 | 63 |
| 20 | -16 | 15 | 01 | 05 | 15 | 00 | -15 | 11 | -18 | 35 | -12 | 00 | -10 | -06 | 09 | -15 | -07 | 30 | 21 | -15 | -06 | 14 | -07 | 03 | -06 | -04 | -18 | 06 | 11 | 12 | 58 |
| 21 | -31 | -08 | -19 | 25 | 05 | -21 | 03 | 20 | -11 | 12 | -14 | 15 | -06 | -14 | -09 | 05 | 11 | 18 | 12 | -01 | 05 | 32 | -15 | -09 | 12 | 04 | 01 | 10 | -22 | -05 | 66 |
| 22 | -17 | -13 | -03 | -14 | 10 | -28 | -11 | 21 | 07 | 05 | -04 | -07 | 11 | 10 | 10 | -23 | 07 | 00 | 11 | 23 | 15 | 36 | 15 | -11 | 03 | 18 | 03 | -04 | -20 | -12 | 65 |
| 23 | -16 | -26 | 02 | -01 | -10 | 12 | -20 | -01 | -29 | -09 | 25 | -10 | -15 | 03 | -28 | 10 | -07 | -05 | -09 | -04 | -13 | 11 | -39 | 09 | 09 | -04 | 29 | 07 | -04 | -10 | 76 |
| 24 | -03 | -14 | 14 | -13 | 17 | 18 | -01 | 17 | -22 | 14 | -02 | 16 | -17 | 13 | 26 | 04 | -03 | 12 | -11 | 29 | 10 | 18 | -10 | 32 | -09 | 06 | 10 | -21 | 01 | 06 | 69 |
| 25 | -30 | 22 | -23 | -15 | 10 | -24 | -07 | -16 | -01 | -11 | 10 | 08 | -26 | -07 | -19 | 02 | -33 | -12 | -10 | -12 | 17 | 01 | 02 | -05 | 04 | -13 | -09 | -13 | 02 | 07 | 68 |
| 26 | -05 | -06 | -28 | -30 | -05 | -04 | 10 | 32 | -03 | 03 | 14 | -07 | 14 | 08 | -05 | 29 | -11 | -03 | -32 | -16 | 02 | -07 | 03 | 20 | 02 | -07 | 19 | 18 | -04 | -10 | 69 |
| 27 | -11 | -03 | 02 | -25 | 01 | -09 | -05 | 26 | 16 | -02 | 18 | -03 | -07 | 03 | -17 | -28 | -25 | -15 | 18 | 13 | 06 | 01 | 03 | -02 | 21 | -02 | 06 | -19 | -34 | 19 | 70 |
| 28 | 14 | 13 | 18 | -13 | -23 | -19 | -06 | 20 | -39 | -07 | 15 | 02 | 03 | -07 | -05 | 15 | 14 | -07 | 18 | 30 | -09 | 04 | 13 | -01 | 04 | -12 | -07 | 03 | -14 | 05 | 65 |
| 29 | -15 | 20 | 00 | 07 | -16 | 00 | -23 | 26 | -15 | 02 | 21 | -08 | -19 | 15 | 04 | 05 | 21 | -13 | -08 | 15 | 08 | -11 | -07 | -01 | -32 | -13 | 00 | 00 | -05 | -25 | 64 |
| 30 | 50 | 12 | -06 | 00 | 05 | 02 | 18 | 48 | 10 | 03 | -30 | -04 | 07 | 02 | 06 | 15 | -04 | 01 | 00 | 04 | 02 | -11 | 06 | 10 | 04 | 01 | 04 | 00 | 13 | -01 | 71 |
| 31 | -33 | -07 | 07 | 03 | 13 | -04 | 02 | 13 | 17 | 24 | 07 | -07 | -20 | -03 | 20 | -07 | 00 | -20 | -09 | 02 | 13 | -16 | -10 | 33 | -20 | 02 | -20 | 06 | -08 | -12 | 66 |
| 32 | -09 | 06 | -13 | 29 | 06 | -01 | -13 | 03 | -03 | 15 | -01 | 07 | 35 | 01 | -04 | -17 | -19 | -25 | -20 | -03 | 00 | 00 | 05 | 32 | -06 | -07 | 11 | -05 | -14 | 00 | 60 |
| 33 | 04 | 02 | 12 | 12 | 01 | -16 | -32 | -17 | 09 | -13 | -05 | -14 | 20 | 22 | 15 | -07 | 15 | 10 | -17 | -09 | -14 | -01 | -11 | 03 | -05 | -18 | -08 | 34 | 02 | 24 | 67 |
| 34 | 16 | -04 | -04 | 23 | -15 | -25 | 01 | 19 | -13 | -48 | 23 | -12 | -06 | 15 | 14 | 06 | -02 | 17 | 19 | 01 | 14 | -07 | 09 | -08 | -05 | 12 | 01 | 20 | 03 | -10 | 74 |
| 35 | -07 | -19 | -23 | 17 | 21 | -07 | -02 | 12 | -23 | -38 | 02 | 06 | -16 | 14 | -05 | -14 | 17 | 16 | -16 | -09 | 06 | -18 | 03 | 17 | -21 | -05 | 05 | 11 | -07 | 10 | 68 |
| 36 | -20 | -02 | -35 | 06 | -29 | 05 | 01 | 29 | -02 | -08 | 22 | 13 | -07 | 10 | 01 | 13 | 01 | -07 | 03 | 03 | 10 | -17 | -11 | -08 | -16 | 23 | -09 | -02 | 16 | -13 | 63 |
| 37 | -13 | -08 | -12 | -29 | 19 | 21 | 03 | 28 | -03 | -30 | 15 | 07 | -02 | -08 | 04 | 04 | 00 | 35 | 20 | 04 | -11 | -14 | -03 | 01 | -07 | -12 | -25 | 07 | -14 | 09 | 73 |
| 38 | 01 | -07 | -26 | -13 | 10 | 01 | 11 | -10 | -23 | -20 | -17 | 08 | 09 | -30 | 04 | -18 | 03 | 18 | 10 | 07 | -28 | -12 | -27 | 06 | -11 | -08 | -18 | -05 | -12 | -08 | 67 |
| 39 | 19 | 23 | 04 | -05 | 05 | -12 | 09 | 33 | -26 | -14 | -01 | -14 | 12 | 01 | 16 | 03 | 06 | 37 | 07 | -21 | 08 | -18 | 05 | -02 | 02 | -21 | -04 | -03 | 09 | 14 | 69 |
| 40 | 13 | -26 | -01 | 28 | 03 | -10 | -13 | 14 | -22 | 16 | 22 | 12 | 21 | -10 | -02 | 15 | 00 | -03 | -12 | -04 | -21 | 08 | 17 | -10 | 34 | -03 | -15 | 09 | 07 | -13 | 70 |
| 41 | 39 | -04 | 14 | -02 | 02 | 09 | 13 | 27 | -05 | 06 | -05 | -12 | 10 | 05 | -21 | -11 | 11 | 19 | 21 | -10 | 36 | -09 | 23 | 10 | 12 | -03 | 01 | 03 | -18 | 11 | 72 |
| 42 | -47 | 22 | -04 | 10 | -06 | 13 | 18 | -05 | -21 | -05 | 04 | 08 | -01 | -06 | 06 | 21 | -15 | 14 | 04 | -07 | 11 | 00 | -04 | -12 | -32 | -06 | 00 | -18 | -04 | 03 | 66 |
| 43 | -46 | 13 | 18 | -10 | -09 | 03 | -07 | 09 | -08 | 20 | -03 | -12 | -11 | -19 | 01 | 07 | -01 | -15 | -04 | -06 | 04 | -36 | -07 | -08 | -24 | 05 | -25 | -04 | 01 | 08 | 70 |
| 44 | 04 | 23 | 14 | 05 | -06 | 22 | -21 | -07 | 00 | -13 | 14 | 15 | 40 | -13 | 02 | -19 | 15 | 12 | 03 | -02 | 18 | -03 | -10 | -02 | 07 | -18 | 16 | 12 | -01 | 21 | 65 |
| 45 | -25 | -19 | 29 | 02 | -05 | -16 | -05 | 43 | -18 | 14 | -16 | -01 | -05 | 00 | 12 | 01 | -14 | -02 | 05 | 03 | 12 | -20 | -10 | -13 | -25 | 13 | 14 | 12 | 06 | 01 | 71 |
| 46 | -16 | 01 | 02 | 04 | 30 | -04 | -01 | 49 | 01 | -13 | -14 | -13 | 03 | -01 | -04 | 04 | -13 | -22 | 17 | 02 | -01 | -12 | 08 | -13 | -30 | -07 | -04 | 09 | 03 | -07 | 66 |
| 47 | -06 | -12 | -05 | -18 | -41 | -07 | 09 | 21 | -24 | 18 | -05 | 07 | 14 | -04 | -01 | -16 | -25 | -12 | 05 | -08 | -09 | -15 | -05 | 07 | 01 | -22 | 10 | 11 | 29 | -03 | 70 |
| 48 | 58 | 01 | 20 | -06 | 02 | 00 | -07 | 06 | -31 | -07 | 24 | -02 | -08 | 00 | 07 | 10 | 00 | -09 | 03 | -11 | 05 | 10 | -01 | -03 | -04 | -02 | 01 | -02 | 02 | -21 | 64 |
| 49 | 33 | 06 | -01 | -01 | 16 | 05 | 01 | -12 | -13 | 23 | 55 | 03 | -04 | -09 | -01 | -11 | 04 | 02 | -10 | -03 | 00 | 10 | 15 | -06 | -33 | 34 | -04 | -20 | 03 | 07 | 87 |
| 50 | 39 | 02 | -01 | 00 | 12 | -01 | 03 | -17 | -17 | 19 | 61 | 03 | 00 | -09 | 00 | -09 | 05 | 05 | -06 | -06 | -03 | 04 | 12 | -09 | -23 | 27 | -01 | -16 | -01 | 03 | 83 |
| 51 | 15 | -10 | 06 | 25 | 02 | 07 | 23 | 34 | -21 | 18 | -12 | 27 | -10 | 17 | -18 | -24 | 05 | -05 | 18 | 00 | 11 | -26 | -14 | 12 | 01 | -06 | -09 | 01 | 10 | 08 | 74 |
| 52 | -32 | -11 | -08 | 09 | -02 | 00 | 07 | 24 | 41 | -16 | 24 | 07 | 18 | 01 | 10 | 02 | 08 | -13 | 00 | 01 | 05 | -03 | 00 | -16 | 08 | 10 | 01 | -15 | 14 | 03 | 60 |
| 53 | -19 | -22 | 15 | -17 | 14 | -07 | 13 | 32 | 12 | -10 | 24 | 00 | 08 | -24 | -12 | 03 | 30 | -15 | -20 | 07 | 01 | -20 | -12 | -04 | 01 | -17 | -03 | -17 | 12 | 10 | 73 |
| 54 | -13 | 28 | -09 | -09 | 22 | 02 | 11 | 22 | 06 | 08 | 13 | -17 | 06 | 31 | -17 | -30 | 02 | -25 | 00 | -02 | -11 | -14 | -21 | -33 | 06 | 02 | 07 | 04 | 03 | 04 | 76 |
| 55 | 02 | 02 | -06 | 02 | 21 | 21 | 01 | 17 | -06 | 14 | 11 | 16 | 09 | 11 | 01 | 23 | 02 | -01 | 07 | 06 | 11 | 21 | 25 | -02 | 04 | -30 | 02 | 34 | -25 | -20 | 69 |
| 56 | -35 | 03 | 01 | 01 | 36 | 01 | -11 | 28 | -01 | 07 | 08 | 09 | 02 | 03 | 05 | 01 | -10 | -07 | -02 | -07 | -10 | 00 | 06 | -22 | -09 | -08 | 13 | 36 | 14 | -24 | 68 |
| 57 | -06 | 16 | -08 | -04 | -06 | 22 | -27 | 40 | 26 | 01 | -12 | 17 | 13 | 03 | 05 | 05 | 18 | -15 | -07 | -16 | -07 | -06 | -01 | 04 | 08 | 35 | -09 | -06 | -03 | -02 | 69 |
| 58 | -21 | 04 | -15 | -10 | 03 | -04 | -02 | 23 | -21 | 14 | -04 | -19 | 13 | -03 | 07 | -13 | 05 | 17 | -21 | 13 | 06 | -23 | 00 | 21 | 14 | -04 | 11 | -25 | 00 | 25 | 69 |
| 59 | -48 | 03 | 01 | -01 | 00 | 04 | 12 | 13 | -09 | -12 | 10 | 01 | 19 | 04 | 15 | 12 | -02 | 16 | -12 | 05 | -18 | -03 | 28 | 13 | 14 | 14 | 13 | -09 | -18 | 14 | 66 |
| 60 | 07 | -05 | 02 | -19 | 09 | -05 | -17 | 11 | 06 | 16 | 18 | 00 | 12 | 08 | -10 | 09 | 21 | -13 | 26 | 01 | 07 | 35 | -26 | 19 | -12 | -36 | -12 | -09 | 17 | -07 | 76 |
| 61 | 15 | -15 | -25 | -02 | 07 | 01 | 00 | -16 | 08 | 13 | 26 | -19 | 13 | -04 | 19 | 01 | -09 | -12 | 11 | -23 | 16 | 28 | 02 | 05 | 04 | -28 | -19 | -25 | 00 | 07 | 70 |
| 62 | -10 | 05 | -09 | -09 | -13 | -10 | 04 | 30 | -10 | 06 | 01 | -08 | -10 | -26 | -08 | -08 | 21 | -04 | -17 | 05 | 06 | 36 | 20 | 05 | -02 | -10 | -02 | 21 | 29 | 11 | 66 |
| 63 | -23 | -04 | -07 | -04 | 00 | -02 | -10 | 05 | -04 | 00 | -02 | -08 | -19 | -06 | -26 | -11 | 23 | 05 | 00 | -03 | 09 | 00 | 37 | 07 | 13 | 10 | -18 | 26 | 41 | 21 | 74 |
| 64 | -42 | 06 | 19 | 12 | -04 | 03 | 01 | 24 | 05 | -14 | 05 | -13 | -20 | -08 | 01 | 20 | 02 | 09 | 03 | -19 | -05 | 19 | -02 | 35 | 27 | 08 | 03 | -08 | 02 | 19 | 74 |
| 65 | -38 | -03 | 15 | 14 | 08 | 09 | -11 | 04 | 07 | -07 | 22 | -23 | -11 | 06 | 02 | 14 | -06 | -01 | 22 | -09 | 04 | 06 | -04 | 15 | 31 | 06 | -06 | -23 | -04 | 38 | 75 |
| 66 | 02 | 06 | -12 | 05 | -08 | -05 | -15 | 10 | -45 | 13 | -03 | -02 | 15 | -13 | 16 | 01 | -05 | 15 | -12 | 07 | 11 | -10 | -21 | -14 | 26 | 11 | -24 | 07 | -17 | 12 | 66 |
| 67 | 09 | -14 | 12 | 00 | 04 | 10 | -07 | 21 | -29 | -16 | -34 | -05 | -04 | 07 | -03 | 02 | -01 | -20 | -05 | 04 | -04 | 13 | 10 | -25 | 04 | -03 | -02 | -50 | 07 | -19 | 76 |
| 68 | -07 | -15 | -05 | 06 | 00 | 20 | 09 | -05 | 12 | 36 | 21 | -16 | 00 | 05 | -04 | 13 | -08 | 21 | 20 | 17 | -07 | -28 | -10 | -09 | 02 | 02 | 11 | 31 | 11 | 23 | 71 |
| 69 | -07 | -07 | 02 | 07 | 00 | 05 | -12 | 13 | -21 | -05 | -37 | -01 | -04 | -03 | -01 | -02 | 07 | -27 | -10 | -13 | -05 | 11 | 27 | -14 | -03 | -06 | -02 | -55 | -02 | -07 | 76 |
| 70 | -04 | -03 | 19 | 01 | 07 | -05 | -09 | 22 | 11 | -07 | 08 | 24 | 23 | -21 | -14 | -02 | -43 | -01 | 01 | 08 | 06 | 09 | 30 | 14 | -05 | 19 | -15 | 15 | 09 | -16 | 73 |
| 71 | 03 | 15 | 10 | 11 | -01 | -04 | 19 | 46 | -11 | 09 | 16 | 03 | 14 | -20 | -15 | 07 | 26 | -20 | -02 | -24 | -04 | -14 | -06 | 00 | 11 | 13 | 17 | -03 | -27 | -06 | 77 |
| 72 | 03 | 08 | -03 | 01 | -10 | 05 | -11 | 19 | 05 | 09 | 11 | 12 | -32 | -20 | 17 | -11 | 01 | -19 | 39 | -06 | -23 | -11 | 16 | -06 | 21 | -20 | 27 | 05 | -01 | -04 | 73 |
| 73 | -02 | -13 | -17 | 02 | -15 | 03 | -08 | 33 | 03 | 12 | 16 | 09 | -34 | 10 | 27 | -23 | 04 | -26 | 02 | -12 | -07 | -15 | 25 | -04 | 12 | -23 | 00 | -03 | -21 | 09 | 76 |
| 74 | -06 | 16 | 07 | -16 | 16 | -01 | -08 | -08 | -16 | 03 | 00 | 30 | -14 | 09 | 07 | 03 | -16 | 13 | -23 | 08 | 15 | -07 | 04 | -10 | 41 | -10 | 21 | -12 | 27 | 12 | 71 |
| 75 | -29 | 03 | -04 | -01 | 06 | 06 | 14 | -07 | -01 | -11 | -02 | -01 | -03 | -04 | -02 | 03 | 02 | 04 | 07 | -02 | 03 | 65 | -01 | 04 | -07 | -04 | 01 | 09 | 02 | -39 | 74 |
| 76 | -04 | 11 | -08 | -01 | -19 | 18 | 03 | -26 | -13 | 09 | -11 | -14 | -24 | -10 | -02 | -24 | 04 | 25 | -03 | -02 | -07 | 24 | 36 | 17 | -16 | 04 | 18 | 22 | -08 | -13 | 76 |
| 77 | 68 | 02 | -13 | -11 | -01 | -02 | 02 | 29 | 06 | 09 | -20 | 00 | -01 | 07 | 02 | 22 | 01 | -04 | 06 | 04 | 03 | 05 | -01 | -01 | 11 | 11 | -02 | 01 | 01 | 09 | 73 |
| 78 | -12 | 05 | 00 | 00 | 06 | -03 | -06 | -06 | 03 | 08 | 04 | -11 | 01 | 02 | -01 | -05 | 07 | 24 | 06 | 02 | -01 | -33 | 06 | 12 | 22 | 04 | -04 | -16 | 08 | -79 | 95 |
| 79 | -13 | 08 | 07 | 02 | 05 | 03 | -02 | -01 | 04 | 04 | 02 | -12 | 00 | 08 | -07 | 05 | -06 | 23 | 06 | 03 | -05 | -30 | 06 | 09 | 18 | 03 | -03 | -13 | 03 | -77 | 88 |
| 80 | -10 | -02 | -10 | -03 | 06 | -08 | -05 | -06 | -06 | 07 | 08 | -07 | 11 | -04 | 08 | -15 | 01 | 19 | 10 | -02 | 05 | -28 | 03 | 17 | 25 | 03 | -01 | -11 | 12 | -70 | 83 |

Note: Decimals have been ommitted

# Table XV

## Rotated Factor Matrix and Communalities
## For Combined Urban and Rural General Practitioner Sample

| Variables | Factors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | $h^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC | DD | |
| 1 | 10 | 14 | -26 | -14 | 06 | 04 | -33 | -14 | -29 | -09 | -08 | 33 | 05 | 25 | -01 | 09 | -08 | 02 | 01 | 08 | 00 | -10 | 07 | 13 | -06 | -19 | -09 | -22 | -11 | 11 | 69 |
| 2 | 31 | 03 | 04 | -17 | 02 | -10 | 03 | -03 | 13 | -17 | 21 | 21 | -15 | -15 | -35 | 12 | -08 | -02 | -18 | -11 | 04 | 01 | -15 | 14 | -04 | 09 | 05 | 03 | 16 | 02 | 60 |
| 3 | 68 | -06 | -10 | 04 | 03 | -21 | 03 | -10 | 07 | -13 | 21 | 03 | -07 | 06 | -12 | 09 | -05 | -08 | -02 | 01 | 01 | -15 | 01 | 03 | 02 | 01 | 12 | 04 | -12 | 15 | 71 |
| 4 | 17 | 13 | -06 | -05 | -11 | -29 | -20 | 11 | -11 | -11 | 00 | -06 | 11 | -07 | -11 | -18 | -10 | 02 | 09 | 09 | 07 | 11 | -02 | 02 | -52 | -04 | 18 | 13 | 10 | -03 | 67 |
| 5 | 04 | -09 | -05 | -02 | 01 | -08 | 07 | 13 | -08 | -05 | 06 | 08 | -23 | 07 | -12 | -69 | -05 | -07 | -07 | 03 | -03 | 08 | -05 | -04 | -03 | 00 | 04 | -11 | -13 | -04 | 67 |
| 6 | -05 | 07 | -20 | 07 | 47 | 17 | 00 | -04 | -07 | 08 | -16 | -09 | -10 | 09 | 04 | -15 | 00 | -07 | 01 | 02 | 15 | 03 | 21 | 11 | -07 | 14 | -02 | -08 | -33 | 10 | 63 |
| 7 | 17 | -05 | -01 | 09 | 11 | -03 | -06 | -06 | -03 | 07 | -03 | 01 | -06 | 03 | 01 | -15 | 10 | 03 | -10 | 08 | 03 | 73 | 01 | 08 | 04 | -06 | -05 | 03 | 03 | 04 | 68 |
| 8 | 49 | 03 | 00 | -06 | 07 | -05 | -03 | 00 | -04 | 20 | 04 | -09 | -19 | -01 | 05 | -13 | 09 | -01 | -03 | 10 | 00 | 33 | 01 | -01 | -24 | -23 | -02 | -15 | -05 | 01 | 63 |
| 9 | -12 | 24 | -35 | 07 | 03 | -09 | 27 | -08 | 02 | -03 | 16 | 12 | -29 | 22 | 13 | -07 | -01 | 26 | -04 | -01 | -08 | -02 | -18 | 14 | -26 | -20 | -10 | 02 | 00 | -03 | 73 |
| 10 | 04 | 06 | 09 | 11 | -03 | 21 | 00 | 05 | -09 | -06 | 04 | 00 | -70 | 03 | 05 | -04 | 12 | -02 | 01 | 03 | 05 | 01 | 08 | -03 | 04 | 05 | 09 | 03 | 15 | -05 | 65 |
| 11 | 15 | -04 | 04 | -11 | -04 | -08 | -08 | 06 | 12 | 09 | -18 | 03 | -71 | -11 | -11 | -17 | -19 | 08 | 03 | -02 | 01 | 09 | 04 | 03 | 07 | 03 | 00 | 08 | -08 | 00 | 73 |
| 12 | -11 | 07 | 04 | 00 | 03 | -03 | 00 | 05 | -11 | 07 | 05 | -04 | 06 | 61 | -06 | -07 | 03 | 04 | 08 | 03 | 06 | 12 | 17 | 33 | 09 | -01 | -02 | 07 | 11 | 09 | 63 |
| 13 | 21 | -15 | 28 | -01 | 08 | 01 | -22 | -22 | -10 | -05 | 06 | -02 | -12 | -02 | 01 | -45 | -14 | 27 | -32 | -03 | 22 | 09 | 03 | 00 | 07 | -07 | -06 | -02 | 04 | -02 | 74 |
| 14 | 10 | 06 | -14 | 05 | 03 | 07 | 09 | 01 | -06 | 05 | -02 | -08 | -02 | 05 | -78 | -13 | 05 | 13 | -03 | -01 | -02 | -01 | 04 | -06 | 02 | -05 | -02 | -12 | -05 | -04 | 74 |
| 15 | 37 | -03 | 00 | -05 | 17 | 05 | -14 | 22 | 11 | -16 | 07 | -10 | -04 | -23 | -18 | -13 | -22 | 40 | 05 | 04 | -13 | -05 | -08 | -07 | -09 | -03 | 19 | 13 | 04 | 04 | 70 |
| 16 | -04 | -04 | 09 | -04 | 01 | 06 | 10 | 02 | -02 | 03 | 03 | -02 | -04 | 09 | 02 | -07 | 02 | 80 | 04 | 03 | 01 | -01 | 05 | 05 | -07 | -02 | 01 | -09 | 05 | -05 | 71 |
| 17 | -03 | -15 | 02 | -04 | 03 | -08 | -08 | 05 | 16 | -15 | 00 | 10 | 08 | 08 | -13 | 10 | 08 | 68 | 07 | 10 | -05 | 22 | 05 | 02 | -03 | 13 | -07 | 00 | 07 | 01 | 70 |
| 18 | 00 | 11 | -04 | 08 | -16 | -06 | -09 | -04 | -26 | 12 | -06 | -04 | -08 | -18 | -06 | 09 | -12 | 67 | 01 | -11 | 17 | 03 | -13 | -02 | 06 | -06 | -02 | 12 | -17 | -03 | 77 |
| 19 | 22 | 17 | -01 | -22 | 19 | -01 | -21 | -06 | 01 | 02 | 09 | -12 | -12 | 00 | 25 | -12 | 06 | 24 | -33 | 20 | 20 | 07 | 14 | -04 | 04 | 02 | -14 | -02 | -06 | -02 | 63 |
| 20 | -05 | -03 | -01 | -17 | 24 | -10 | -04 | -34 | 13 | 10 | 05 | 17 | 03 | 01 | 05 | 04 | 01 | 21 | 09 | 10 | -08 | 25 | 15 | 16 | 23 | -20 | 07 | 08 | 08 | 00 | 58 |
| 21 | -16 | 01 | -01 | -09 | 01 | 12 | 01 | 00 | -05 | -08 | -15 | 08 | 00 | 04 | -03 | 11 | -08 | 12 | -02 | -04 | 04 | 71 | 05 | 07 | 13 | 02 | 03 | -02 | -05 | 00 | 66 |
| 22 | -05 | 06 | 02 | 13 | 12 | 05 | -04 | -01 | 06 | -10 | -02 | -20 | 04 | 17 | 08 | 02 | -05 | 06 | 14 | 18 | 52 | 34 | 09 | -12 | 01 | -07 | -03 | -13 | -15 | -07 | 65 |
| 23 | -20 | 05 | -01 | 01 | -02 | 00 | 06 | 04 | -05 | -06 | -01 | -01 | 05 | -02 | -07 | -06 | 05 | -13 | -80 | 06 | -01 | 11 | -04 | 12 | 01 | -05 | 01 | 03 | 02 | -02 | 76 |
| 24 | 06 | 03 | -02 | -04 | -01 | 05 | 01 | -04 | 00 | 01 | 08 | 08 | -01 | 01 | 01 | 00 | -02 | 04 | -08 | 79 | 02 | 06 | -04 | 10 | -02 | -04 | -05 | -09 | 12 | 05 | 69 |
| 25 | -24 | -10 | -09 | -09 | 07 | -09 | 10 | -06 | -24 | -01 | 00 | -14 | -09 | -22 | -04 | 22 | -05 | -07 | 01 | -22 | 20 | 01 | 07 | 14 | -04 | -10 | -02 | -08 | 46 | 07 | 68 |
| 26 | 29 | -02 | -29 | -01 | 10 | 34 | 06 | 20 | -30 | -02 | -08 | -24 | 02 | -14 | 16 | 02 | 06 | 05 | -30 | 02 | 02 | -05 | 13 | 00 | 06 | 04 | -04 | 12 | 07 | -07 | 69 |
| 27 | -01 | 06 | -06 | -05 | 03 | -02 | 00 | 11 | 00 | 09 | -01 | 05 | -06 | -02 | -01 | 00 | -02 | 03 | -06 | -03 | 75 | -02 | -09 | 17 | -04 | -01 | 21 | -01 | 07 | 10 | 70 |
| 28 | 06 | 75 | 07 | -06 | -03 | 07 | 05 | 04 | -01 | 00 | 04 | 03 | -01 | 07 | -05 | 06 | -06 | -07 | -04 | 02 | 08 | -03 | 06 | -01 | 11 | -03 | 09 | -06 | -04 | 07 | 65 |
| 29 | -16 | 34 | -04 | 14 | 27 | 00 | -15 | 01 | -30 | -17 | 07 | -02 | -13 | -21 | -22 | -01 | 23 | 01 | -08 | 15 | -07 | -01 | 02 | -06 | -03 | -13 | 11 | -04 | -09 | -14 | 64 |
| 30 | 76 | 05 | -02 | -01 | 07 | 08 | -06 | 06 | -03 | 04 | -12 | 15 | -02 | -04 | -07 | -09 | -01 | 04 | 16 | 04 | -07 | 00 | 01 | -08 | -05 | 06 | -02 | -07 | 01 | -02 | 71 |
| 31 | -15 | -18 | -17 | 04 | 27 | -10 | 02 | 14 | -13 | 01 | -02 | 03 | -17 | -31 | 05 | 14 | -01 | -12 | 14 | 35 | 03 | 01 | 02 | 16 | 01 | -11 | 10 | 16 | -22 | -15 | 66 |
| 32 | -06 | -10 | -70 | 08 | 04 | 04 | -10 | -02 | 04 | -02 | 00 | 06 | 09 | -03 | -13 | -02 | -10 | -11 | -01 | 02 | 04 | 03 | -07 | -02 | 03 | -02 | 00 | -04 | -04 | 01 | 60 |
| 33 | -06 | 04 | -13 | 12 | 05 | -15 | -13 | -09 | 35 | -33 | -19 | -19 | -10 | 07 | 09 | -01 | 12 | 04 | -02 | -10 | -19 | -15 | -02 | -07 | 16 | -18 | -10 | 23 | -08 | 20 | 67 |
| 34 | 16 | 27 | 21 | 09 | 07 | -02 | 13 | -09 | -23 | -59 | 04 | -04 | 01 | 11 | 03 | -24 | -12 | -04 | 04 | -16 | 01 | 03 | -06 | 07 | -01 | 08 | 01 | 10 | -08 | -09 | 74 |
| 35 | -05 | -09 | -10 | -23 | 06 | 04 | 03 | 06 | -05 | -70 | 01 | 15 | 01 | -10 | 01 | 02 | 09 | 04 | -10 | 08 | -05 | -02 | 12 | -01 | -02 | 12 | -02 | -03 | 01 | 06 | 68 |
| 36 | -04 | 01 | 04 | 01 | 09 | -07 | -16 | 09 | -73 | -11 | 03 | 07 | -01 | 08 | -02 | -04 | 00 | 01 | -06 | 00 | -03 | 05 | 03 | -02 | 02 | 02 | 05 | 05 | -05 | -08 | 63 |
| 37 | 00 | 05 | 23 | -63 | 15 | 21 | -10 | 09 | -10 | -18 | -04 | 00 | -08 | 05 | 05 | -04 | -05 | 19 | 00 | 08 | 13 | -15 | -01 | 07 | 05 | -05 | 03 | 14 | -01 | 00 | 73 |
| 38 | -06 | 02 | -02 | -73 | -08 | -15 | 07 | 00 | 04 | -04 | -06 | 01 | 07 | 00 | 01 | -01 | 02 | -05 | -01 | 00 | -07 | 08 | -08 | -19 | 08 | 02 | -03 | -03 | -09 | -08 | 67 |
| 39 | 35 | 25 | 00 | -20 | 15 | 04 | 13 | -04 | 03 | -20 | 00 | 06 | 07 | -04 | 08 | -29 | 12 | 25 | 17 | -10 | -09 | -08 | 03 | 18 | 24 | -03 | -03 | 00 | 23 | -05 | 69 |
| 40 | 09 | 08 | -13 | 12 | -04 | 17 | 02 | 18 | 10 | -04 | 16 | 03 | -15 | 35 | -01 | 06 | -35 | -03 | -18 | -16 | -19 | 13 | 05 | -04 | 35 | -06 | 16 | -09 | -03 | -13 | 70 |
| 41 | 34 | 11 | 10 | 07 | -13 | 30 | -01 | -01 | 20 | -09 | 06 | 39 | 12 | -18 | 01 | -21 | -01 | 13 | 13 | -07 | 28 | -08 | 12 | 08 | 11 | 03 | -06 | 03 | -10 | -04 | 72 |
| 42 | -39 | 07 | -04 | -16 | 19 | 10 | 13 | -09 | -36 | 09 | 01 | -02 | 14 | -07 | -09 | -05 | 07 | 19 | 13 | 04 | -20 | 07 | -13 | 22 | -01 | 11 | -14 | -08 | 11 | 09 | 66 |
| 43 | -31 | 07 | 02 | -04 | 38 | -23 | -07 | 13 | -22 | 25 | -03 | 05 | 01 | -29 | -02 | 13 | 07 | 03 | 10 | 03 | -07 | -16 | 09 | 19 | 26 | 06 | 01 | 00 | -08 | -01 | 70 |
| 44 | -20 | 18 | -12 | -03 | -11 | 09 | -33 | 05 | 25 | -03 | -03 | 04 | 16 | 02 | -08 | -43 | 03 | 01 | 07 | -10 | -04 | -09 | -02 | -03 | 04 | -07 | -04 | 24 | 20 | 13 | 65 |
| 45 | 00 | 12 | 08 | 17 | 53 | -17 | 05 | 11 | -13 | -03 | -16 | 17 | 19 | -13 | 10 | -08 | -11 | 14 | -07 | 26 | 03 | 12 | -01 | -03 | 21 | 17 | 06 | -01 | -07 | 04 | 71 |
| 46 | 14 | 02 | 01 | -12 | 67 | 07 | -01 | 14 | -09 | -11 | -12 | 08 | 09 | -06 | -15 | 03 | -08 | -04 | 10 | -06 | 10 | 01 | 01 | 03 | -07 | -02 | 03 | -15 | -12 | 04 | 66 |
| 47 | 08 | 13 | -25 | -03 | 11 | -12 | 22 | 00 | -23 | 24 | -24 | 18 | 14 | 06 | 19 | -21 | -06 | 04 | -22 | -02 | -03 | -13 | 20 | -20 | 14 | -07 | 23 | 03 | 05 | -02 | 70 |
| 48 | 30 | 29 | 17 | 09 | -03 | 10 | 09 | -06 | 09 | -08 | 39 | 01 | -04 | -12 | 06 | -20 | -07 | -19 | -16 | 01 | -12 | -07 | -13 | -11 | 03 | -19 | 04 | -17 | 05 | -06 | 64 |
| 49 | 01 | -01 | -01 | 03 | -05 | -04 | -01 | -02 | -04 | 02 | 91 | -02 | 03 | 01 | -02 | 00 | -02 | 03 | 03 | 08 | 01 | -06 | 03 | -08 | -02 | -03 | -04 | 03 | -03 | 08 | 87 |
| 50 | 03 | 06 | 00 | 02 | -12 | -01 | 06 | 02 | -01 | -02 | 88 | -02 | 04 | 04 | 01 | -03 | -01 | 01 | -01 | -01 | -01 | -07 | -04 | -10 | 03 | -03 | 01 | 08 | -01 | 01 | 83 |
| 51 | 15 | 01 | -07 | -01 | 07 | -02 | 02 | 06 | -08 | -07 | -05 | 81 | -05 | -02 | 05 | -06 | 04 | 00 | 02 | 09 | -02 | 05 | 00 | -07 | 05 | 00 | 11 | -01 | 08 | 01 | 74 |
| 52 | -12 | -19 | -01 | 12 | 10 | -03 | -18 | 44 | -28 | -02 | -07 | -11 | -03 | 29 | 00 | -13 | -04 | 08 | 15 | -09 | 12 | 04 | -04 | 15 | -15 | -02 | 07 | 03 | -04 | -01 | 60 |
| 53 | -07 | 05 | 02 | -11 | 14 | -05 | 00 | 79 | 00 | 02 | 01 | 04 | -07 | -03 | -02 | -05 | 05 | 07 | -06 | 06 | 05 | -09 | 16 | 08 | -04 | -07 | 01 | -04 | 01 | 01 | 73 |
| 54 | 01 | -09 | -08 | 03 | 40 | -05 | -11 | 11 | -03 | 09 | 06 | 15 | -13 | 17 | 01 | 00 | 54 | -10 | -06 | -24 | 30 | 01 | -05 | -06 | -04 | 00 | -02 | 05 | 11 | 00 | 76 |
| 55 | 01 | 09 | -04 | 04 | 16 | 75 | -02 | -07 | 06 | -02 | -03 | 01 | -11 | 01 | -09 | 04 | -09 | -03 | 01 | 05 | -01 | 10 | -01 | -08 | 01 | -12 | 11 | 09 | -01 | -02 | 69 |
| 56 | -13 | -10 | -03 | 02 | 67 | 24 | -08 | 06 | 01 | -06 | -04 | -07 | -02 | 12 | 04 | 03 | -06 | -01 | -09 | -02 | -07 | 16 | 07 | -09 | -04 | -01 | 12 | 08 | 14 | -12 | 68 |
| 57 | 18 | -09 | -08 | 04 | 08 | -01 | -72 | 10 | -18 | 09 | -06 | -02 | -07 | 00 | 12 | 00 | -02 | 00 | 05 | -01 | 02 | 05 | 01 | 09 | 01 | 05 | 06 | -11 | -08 | -03 | 69 |
| 58 | 09 | 03 | -34 | -13 | -05 | -13 | -01 | 18 | 00 | -02 | -07 | 03 | 14 | 04 | -11 | -01 | 27 | 18 | 03 | 27 | 17 | -06 | 21 | 21 | 32 | 14 | -01 | 02 | 17 | -01 | 69 |
| 59 | -16 | 10 | -26 | -09 | 05 | 18 | -03 | 10 | -07 | -05 | -07 | -21 | 06 | 27 | 12 | 06 | 00 | 16 | 04 | 15 | 07 | -03 | 03 | 38 | 05 | 39 | 00 | -01 | 00 | -04 | 66 |
| 60 | 03 | 15 | 00 | -01 | 01 | 10 | -04 | 13 | 04 | 10 | 01 | 05 | 06 | 01 | -01 | 02 | 05 | 01 | -10 | 10 | 02 | 09 | 06 | -01 | -16 | -79 | -05 | 02 | -05 | 01 | 76 |
| 61 | 03 | -25 | -12 | -01 | -22 | 13 | 24 | 01 | -03 | 05 | 20 | -19 | 06 | 04 | -05 | -12 | 01 | -04 | 14 | -08 | 08 | -04 | -05 | 13 | 13 | -55 | 11 | -09 | -07 | 08 | 70 |
| 62 | 06 | 15 | -05 | 03 | 09 | 04 | 05 | 09 | -05 | 04 | 00 | -10 | -11 | 02 | -03 | -10 | -03 | 02 | 00 | 04 | -05 | 21 | 69 | -01 | -04 | -08 | 05 | -04 | 00 | 18 | 66 |
| 63 | -09 | -07 | 14 | 08 | 05 | -04 | -09 | -02 | 00 | -14 | -04 | 14 | -02 | 11 | 02 | 17 | -08 | -02 | 03 | -10 | 00 | -10 | 74 | 14 | 04 | 02 | 00 | 06 | 07 | 01 | 74 |
| 64 | -03 | 03 | -04 | 03 | 00 | -03 | -06 | 06 | -01 | -01 | -18 | -05 | -07 | 00 | 10 | -02 | -05 | 05 | -12 | 09 | -05 | 18 | 16 | 76 | -10 | 05 | 03 | -01 | 01 | 02 | 74 |
| 65 | -16 | -07 | 06 | 09 | -03 | -07 | -03 | 07 | 02 | -02 | -05 | 02 | 05 | 16 | -06 | 05 | 03 | -01 | -03 | 03 | 17 | -02 | -06 | 77 | 08 | -10 | 07 | 03 | 03 | 10 | 75 |
| 66 | 01 | 18 | -04 | -14 | -07 | -05 | -07 | -05 | -06 | -01 | 01 | 02 | -06 | 03 | -04 | -10 | 02 | -09 | 00 | 03 | 00 | 20 | -04 | -01 | 71 | 08 | -06 | 03 | 12 | 01 | 66 |
| 67 | 11 | 03 | 12 | 02 | 08 | -02 | 01 | 03 | 01 | 04 | -05 | 07 | 04 | 08 | -08 | -07 | 02 | 01 | -09 | 07 | 02 | [illegible] | -07 | -03 | 05 | 00 | -02 | -82 | 03 | -05 | 76 |
| 68 | 02 | -15 | 17 | 06 | 10 | 06 | 09 | 01 | -03 | 16 | 00 | 16 | 14 | 20 | -17 | 09 | 08 | 13 | -13 | 04 | -05 | -12 | -01 | 05 | 17 | 08 | 09 | 61 | -08 | 03 | 71 |
| 69 | -03 | -02 | -09 | 04 | 02 | -04 | -05 | 03 | 01 | 06 | -04 | 01 | 09 | -02 | -10 | 06 | 03 | 07 | 07 | 03 | 00 | -02 | 04 | 03 | 04 | 02 | 11 | -83 | -02 | 02 | 76 |
| 70 | 05 | 04 | -16 | 01 | 27 | 07 | -08 | -02 | -04 | 08 | 07 | 02 | -05 | 05 | 05 | -09 | -71 | -02 | 05 | -03 | 17 | -05 | 09 | 01 | -10 | 07 | -14 | 04 | 04 | -07 | 73 |
| 71 | 17 | 25 | -19 | 03 | 10 | 17 | -18 | 41 | -03 | 09 | 18 | 20 | 04 | -18 | 10 | -11 | 13 | -04 | -08 | -21 | 00 | 27 | -04 | 16 | 04 | 21 | 13 | -06 | -14 | -07 | 77 |
| 72 | 06 | 13 | 09 | -02 | 08 | 02 | -04 | -04 | 05 | 12 | -03 | 06 | 07 | 03 | -04 | -02 | 00 | -07 | -03 | -09 | 04 | 04 | 02 | 07 | -16 | 02 | 78 | 03 | 08 | -06 | 73 |
| 73 | 03 | -04 | -11 | 07 | 05 | 10 | 00 | 05 | -16 | -13 | 00 | 07 | -22 | -05 | 06 | 01 | 12 | 04 | 05 | 06 | 19 | -10 | 05 | 03 | 10 | 00 | 73 | -12 | -06 | 08 | 76 |
| 74 | -03 | -03 | 03 | 12 | -07 | 02 | 02 | 03 | 08 | 04 | -05 | 01 | -06 | 12 | 04 | 01 | 02 | 02 | -03 | 17 | -01 | -04 | 04 | 02 | 09 | 10 | 04 | -04 | 77 | -04 | 71 |
| 75 | -26 | -04 | 05 | -07 | 07 | 27 | 13 | -21 | -04 | 07 | -06 | -22 | -08 | 09 | 05 | -11 | -07 | -07 | -06 | 06 | -05 | 41 | 14 | 05 | -34 | -18 | -19 | -15 | -11 | -11 | 74 |
| 76 | -17 | -01 | -04 | -05 | -13 | 13 | 11 | -55 | 13 | 03 | 09 | -13 | 04 | -13 | -04 | -05 | 05 | 08 | -04 | 09 | -06 | 02 | 39 | -07 | -17 | 25 | 09 | 04 | -16 | -07 | 76 |
| 77 | 75 | 06 | 16 | 06 | -16 | 09 | -12 | -02 | -01 | 04 | 03 | 08 | -01 | -03 | -01 | 04 | -02 | -05 | 04 | -01 | 03 | 05 | -06 | -16 | 07 | -07 | 01 | -05 | 00 | 14 | 73 |
| 78 | -06 | -02 | 02 | -01 | 00 | -01 | -02 | -01 | -02 | 02 | -02 | -02 | -04 | -04 | -03 | 02 | 00 | 04 | 00 | -01 | -03 | -02 | -05 | -04 | -01 | 02 | 00 | -02 | 01 | -97 | 95 |
| 79 | -05 | 03 | 06 | 01 | 06 | 07 | -03 | -02 | -04 | 03 | -06 | 01 | -08 | -03 | -05 | 05 | 00 | 07 | -04 | -03 | -06 | -04 | -10 | 01 | -07 | 07 | -06 | -04 | -03 | -90 | 88 |
| 80 | -05 | -05 | -07 | -07 | -03 | -03 | -04 | 00 | -03 | -03 | 00 | -01 | 07 | 02 | 05 | -08 | -06 | -05 | 01 | 00 | 02 | 02 | 00 | -07 | 06 | -05 | 05 | 01 | 05 | -88 | 83 |

**Note:** Decimals have been ommitted

# Table XVI

Intercorrelation of Variables for Urban General Practitioner Sample

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -- | | | | | | | | | | | | | | | | | | | |
| 2 | -04 | -- | | | | | | | | | | | | | | | | | | |
| 3 | 15 | 28 | -- | | | | | | | | | | | | | | | | | |
| 4 | 13 | 17 | 19 | -- | | | | | | | | | | | | | | | | |
| 5 | 05 | 05 | -01 | 20 | -- | | | | | | | | | | | | | | | |
| 6 | 17 | -19 | -04 | 00 | 17 | -- | | | | | | | | | | | | | | |
| 7 | -11 | 12 | 00 | -04 | 17 | 13 | -- | | | | | | | | | | | | | |
| 8 | 04 | 07 | 18 | 15 | 20 | 09 | 39 | -- | | | | | | | | | | | | |
| 9 | 01 | -06 | 00 | 02 | 20 | -07 | 07 | 08 | -- | | | | | | | | | | | |
| 10 | -24 | 19 | -13 | -07 | 11 | -11 | 02 | 01 | 12 | -- | | | | | | | | | | |
| 11 | -15 | 13 | 14 | -04 | 18 | -15 | 10 | 28 | 03 | 43 | -- | | | | | | | | | |
| 12 | 03 | -09 | 06 | 05 | 08 | 05 | 14 | 10 | -02 | -15 | -05 | -- | | | | | | | | |
| 13 | 07 | 12 | 06 | 09 | 32 | 00 | 25 | 11 | -07 | 08 | 19 | 14 | -- | | | | | | | |
| 14 | 10 | -01 | 02 | 01 | 10 | 05 | 13 | 04 | 14 | -10 | -08 | 06 | 01 | -- | | | | | | |
| 15 | 02 | 20 | 27 | 24 | 14 | -15 | -03 | 06 | 03 | -12 | 19 | -06 | 22 | 02 | -- | | | | | |
| 16 | 08 | -08 | -15 | 05 | 02 | -06 | -03 | -06 | 13 | -07 | 01 | 01 | 27 | 05 | 33 | -- | | | | |
| 17 | 10 | 08 | 01 | 10 | -10 | -06 | 07 | 00 | 04 | -01 | 11 | -02 | 17 | 17 | 35 | 53 | -- | | | |
| 18 | 09 | 10 | 04 | 09 | -05 | -12 | 09 | 05 | 20 | -07 | 18 | -11 | 22 | 13 | 25 | 45 | 34 | -- | | |
| 19 | 14 | -06 | -05 | 12 | 09 | 18 | 12 | 23 | -01 | 05 | 09 | 12 | 32 | -16 | 04 | 22 | 20 | 23 | -- | |
| 20 | 11 | -02 | 09 | -05 | -08 | 05 | 21 | 07 | 02 | -01 | 03 | 07 | 14 | 02 | 06 | 07 | 12 | 01 | 17 | -- |
| 21 | -01 | 04 | -03 | -03 | 03 | 07 | 37 | 11 | 11 | 09 | 04 | -06 | 23 | 11 | -02 | 09 | 13 | 21 | 23 | 25 |
| 22 | 01 | -26 | -05 | -12 | 04 | 18 | 20 | 02 | 10 | 02 | -14 | 18 | 12 | -01 | -24 | -07 | 04 | -03 | 26 | 15 |
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| 59 | 02 | -29 | -23 | 05 | -04 | 19 | -08 | -04 | 00 | -06 | -13 | 24 | -13 | -01 | -07 | 10 | 02 | -02 | 07 | -06 |
| 60 | 14 | -13 | -01 | 00 | 02 | 05 | 22 | 35 | 19 | -12 | -08 | 10 | 03 | 12 | 00 | 03 | -01 | 13 | 01 | 05 |
| 61 | -07 | 08 | 05 | -03 | 08 | 00 | 03 | 09 | 14 | -07 | -02 | 15 | -09 | 06 | -05 | -07 | -16 | 02 | -14 | -08 |
| 62 | 00 | -05 | 01 | 01 | 00 | 10 | 11 | 10 | 03 | 11 | 02 | 10 | 14 | 21 | 05 | 03 | -04 | 05 | 23 | 16 |
| 63 | 13 | -04 | 03 | -06 | -15 | 06 | -14 | -11 | -26 | 12 | 00 | 09 | 04 | -15 | -11 | 02 | 04 | -23 | 08 | 18 |
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| 72 | 04 | 16 | 18 | 17 | -01 | 02 | -07 | -04 | -01 | 08 | 12 | -08 | 01 | 02 | 09 | -20 | -12 | -11 | -09 | -12 |
| 73 | 06 | 09 | 16 | 17 | 07 | 05 | -14 | 00 | 05 | 22 | 10 | -11 | -06 | -03 | 07 | -09 | -11 | -04 | -09 | -06 |
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| Variables | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | -- | | | | | | | | | | | | | | | | | | | |
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| Variables | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
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| 73 | 00 | -16 | -05 | -04 | 04 | 02 | 15 | 10 | 00 | -02 | 26 | 01 | 14 | 15 | 00 | 06 | 03 | 00 | 09 | 00 |
| 74 | -10 | 04 | -02 | 03 | 02 | -11 | 04 | 05 | -07 | -04 | -02 | 04 | 06 | 08 | 05 | 08 | -05 | 11 | 05 | -07 |
| 75 | -15 | 21 | -06 | 04 | -04 | -05 | -07 | 01 | 05 | 00 | -15 | 02 | -15 | -11 | 26 | 29 | -08 | -23 | 04 | 27 |
| 76 | 19 | 00 | -11 | -03 | -06 | -10 | 01 | -01 | 05 | -03 | -08 | -35 | -23 | -22 | 10 | -07 | -07 | -08 | -06 | -04 |
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| 80 | 08 | 02 | 06 | -09 | 02 | 04 | -03 | 03 | 02 | 05 | 06 | 04 | -02 | 05 | -03 | 08 | 06 | 04 | -01 | -06 |

| Variables | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | -- | | | | | | | | | | | | | | | | | | | |
| 62 | -08 | -- | | | | | | | | | | | | | | | | | | |
| 63 | -30 | 28 | -- | | | | | | | | | | | | | | | | | |
| 64 | -15 | 30 | 08 | -- | | | | | | | | | | | | | | | | |
| 65 | 03 | 02 | -01 | 28 | -- | | | | | | | | | | | | | | | |
| 66 | -09 | -01 | -02 | 02 | 25 | -- | | | | | | | | | | | | | | |
| 67 | 01 | -04 | -13 | 03 | 01 | 04 | -- | | | | | | | | | | | | | |
| 68 | -08 | -04 | 02 | -10 | 06 | 00 | -31 | -- | | | | | | | | | | | | |
| 69 | 03 | -01 | -11 | 06 | -02 | -05 | 78 | -56 | -- | | | | | | | | | | | |
| 70 | -15 | 08 | 10 | 07 | -08 | 04 | 10 | -05 | 00 | -- | | | | | | | | | | |
| 71 | -09 | 06 | -17 | 06 | -06 | 00 | -01 | -05 | 04 | 17 | -- | | | | | | | | | |
| 72 | 00 | 06 | -01 | -16 | -18 | -13 | -02 | 10 | -06 | -08 | 15 | -- | | | | | | | | |
| 73 | 11 | 13 | 10 | -07 | -03 | -04 | 09 | 01 | 03 | -21 | 06 | 38 | -- | | | | | | | |
| 74 | -16 | 14 | 02 | 11 | 10 | 17 | -10 | 02 | -11 | 10 | -19 | 11 | 06 | -- | | | | | | |
| 75 | -02 | 19 | 02 | 09 | -07 | -05 | 07 | -31 | 08 | 14 | -02 | -11 | -24 | -12 | -- | | | | | |
| 76 | -05 | 29 | 16 | 15 | -15 | -12 | 00 | -12 | -04 | 05 | -11 | 05 | -05 | -07 | 36 | -- | | | | |
| 77 | 02 | -10 | -02 | -13 | -14 | -05 | 05 | 12 | 13 | -04 | -05 | 12 | 02 | -10 | -30 | -14 | -- | | | |
| 78 | -08 | -19 | -02 | -03 | -03 | -01 | 11 | 04 | 07 | 05 | 04 | 12 | -09 | 06 | 14 | -04 | -15 | -- | | |
| 79 | -06 | -21 | -03 | 01 | -01 | -04 | 14 | 05 | 07 | 10 | 08 | 08 | -15 | 01 | 13 | -04 | -09 | 94 | -- | |
| 80 | -09 | -14 | 03 | -07 | 02 | 02 | 06 | -01 | 03 | 07 | 08 | 16 | 01 | 08 | 11 | -06 | -13 | 86 | 74 | -- |

Note: Decimals have been omitted

## Table XVII
### Eigenvalues and Cumulative Proportion of Variance Accounted for For Urban General Practitioner Sample

| Factor | Eigenvalue | Cumulative Proportion of Variances |
|---|---|---|
| J | 4.97 | .08 |
| A | 4.46 | .16 |
| W | 3.76 | .22 |
| BB | 3.41 | .27 |
| P | 3.28 | .33 |
| Q | 3.04 | .38 |
| Z | 2.84 | .43 |
| C | 2.47 | .47 |
| V | 2.43 | .51 |
| I | 2.34 | .55 |
| T | 2.12 | .58 |
| L | 2.08 | .62 |
| S | 1.97 | .65 |
| F | 1.88 | .68 |
| E | 1.80 | .71 |
| X | 1.73 | .74 |
| H | 1.63 | .76 |
| R | 1.57 | .79 |
| D | 1.48 | .82 |
| B | 1.47 | .84 |
| O | 1.40 | .86 |
| AA | 1.35 | .89 |
| Y | 1.25 | .91 |
| U | 1.20 | .93 |
| N | 1.17 | .95 |
| M | 1.15 | .96 |
| G | 1.12 | .98 |
| K | 1.03 | 1.00 |

# Table XVIII

### Unrotated Factor Matrix and Communalities For Urban General Practitioner Sample

| Variables | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | $h^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | Factors | | | | | | | | | | | | | | | | |
| 1 | 32 | -20 | -18 | -03 | 04 | -16 | -28 | -16 | -07 | -27 | 27 | 29 | -05 | 07 | 07 | 05 | 27 | 03 | 09 | 18 | 03 | -14 | 01 | -06 | -06 | 12 | -04 | -08 | 72 |
| 2 | 23 | -01 | 22 | 34 | 15 | 07 | 03 | -02 | -13 | 33 | 00 | 00 | 00 | -19 | -10 | -04 | -08 | -08 | -17 | 19 | 15 | 01 | -11 | 04 | -13 | -19 | -21 | -21 | 67 |
| 3 | 50 | -04 | 01 | 03 | -01 | 00 | 06 | -08 | 02 | 34 | 08 | -03 | -09 | 04 | 10 | 27 | 04 | -07 | -26 | 09 | 01 | -01 | 07 | -31 | -04 | 00 | 00 | -23 | 72 |
| 4 | 31 | -03 | -01 | 12 | 03 | 17 | -22 | -17 | -24 | 03 | 06 | -02 | 08 | -41 | 09 | 00 | 15 | -11 | 09 | -18 | 06 | -02 | -09 | -14 | 34 | -20 | 07 | -21 | 77 |
| 5 | 13 | -06 | 07 | -10 | -17 | 06 | 06 | -04 | -28 | -14 | 23 | -13 | 00 | 19 | 24 | 16 | 02 | -19 | 06 | -16 | 11 | 24 | -30 | 27 | -02 | -17 | 12 | -25 | 76 |
| 6 | 05 | -06 | -11 | 07 | -22 | -01 | 31 | -08 | -10 | -50 | -07 | 14 | 13 | 06 | 05 | 34 | -08 | -07 | 11 | -08 | 06 | -03 | 01 | 04 | 11 | 28 | -16 | -10 | 76 |
| 7 | 12 | -09 | 05 | 11 | 17 | 17 | 03 | -16 | 22 | -32 | -15 | -30 | 01 | 04 | -06 | 22 | -24 | -09 | -16 | 16 | 03 | 20 | -32 | -14 | 02 | -13 | -01 | 09 | 74 |
| 8 | 28 | -15 | 10 | -09 | -05 | 04 | -11 | 13 | 16 | -13 | -10 | -35 | 24 | 06 | -06 | 32 | -14 | -13 | 11 | 06 | 09 | -02 | -31 | -12 | 09 | -18 | 00 | -10 | 71 |
| 9 | -23 | -15 | -23 | -16 | -03 | -01 | -06 | -16 | -31 | 06 | 15 | -03 | -09 | 14 | -05 | 08 | -13 | -08 | -22 | -15 | -08 | -14 | -41 | 02 | 09 | -21 | 22 | 11 | 75 |
| 10 | -16 | -05 | 46 | -04 | 08 | -08 | 15 | 07 | -29 | 02 | 19 | -12 | 02 | 07 | -14 | -09 | -27 | 38 | -05 | -10 | 03 | 05 | -08 | 06 | -11 | -21 | -21 | -07 | 80 |
| 11 | 24 | -25 | 31 | -13 | 08 | -07 | -06 | 03 | -09 | 18 | 05 | -36 | 15 | 15 | 04 | -06 | -36 | 22 | -07 | -09 | 12 | 00 | -10 | 20 | -15 | -12 | 01 | -04 | 76 |
| 12 | -05 | -28 | 01 | -01 | 05 | -35 | -13 | 04 | 11 | -13 | -01 | -05 | 11 | -03 | 05 | 17 | 23 | -27 | -09 | -05 | 12 | 55 | 00 | -12 | 07 | -01 | 07 | 10 | 78 |
| 13 | 41 | 14 | 32 | -02 | -15 | -07 | -03 | -05 | 01 | -06 | 14 | 12 | -11 | -01 | 02 | 03 | 00 | -11 | 06 | 04 | -04 | 33 | -36 | 25 | 00 | -13 | -07 | 12 | 73 |
| 14 | 00 | 25 | -33 | 20 | 30 | -12 | -10 | 08 | -11 | -10 | -13 | 06 | -11 | 33 | 20 | 02 | 02 | -17 | -16 | 00 | -04 | 04 | -33 | -07 | -11 | -03 | -17 | -10 | 76 |
| 15 | 59 | 00 | -17 | 20 | 08 | 09 | 21 | 09 | -15 | 22 | -04 | 05 | 11 | -05 | 03 | -12 | -03 | 03 | 12 | -19 | 01 | 05 | -10 | -02 | -07 | -23 | 27 | 10 | 80 |
| 16 | 25 | 03 | -17 | 05 | -15 | -37 | 06 | 01 | -18 | -01 | 00 | 00 | -01 | -08 | 03 | -39 | 08 | 02 | 15 | -08 | 05 | -01 | -28 | 05 | -03 | -10 | 05 | 47 | 81 |
| 17 | 36 | 01 | -18 | 12 | 01 | -17 | 03 | -17 | -08 | 02 | -22 | 07 | 15 | 04 | 01 | -39 | -02 | 21 | -08 | -02 | 02 | 11 | -25 | -03 | -03 | -04 | -07 | 33 | 71 |
| 18 | 42 | 10 | -32 | -22 | 04 | -13 | -16 | 05 | -06 | 03 | 05 | -01 | -07 | -13 | -22 | -17 | -09 | 00 | -18 | -05 | 07 | -19 | -22 | 26 | 01 | -18 | -18 | 26 | 82 |
| 19 | 28 | -03 | 22 | -06 | -36 | -12 | -12 | 01 | 23 | -27 | -04 | 09 | 09 | -19 | 13 | 10 | 07 | 26 | -06 | -21 | -12 | 01 | -27 | 12 | 18 | -10 | -22 | 19 | 85 |
| 20 | 12 | -22 | 11 | 20 | -07 | 07 | 08 | -04 | 19 | -26 | 29 | 08 | -05 | -06 | 03 | 03 | -08 | -01 | -29 | 18 | -23 | -05 | -16 | -27 | -20 | -11 | 05 | 27 | 74 |
| 21 | 13 | 08 | 09 | -14 | 20 | 08 | -06 | 16 | 10 | -30 | -02 | 13 | -05 | -12 | 01 | -04 | -32 | 09 | -28 | 16 | 00 | 08 | 40 | -04 | 13 | 09 | -04 | 12 | 69 |
| 22 | -11 | 12 | 04 | 32 | -16 | -17 | 19 | -26 | 18 | -30 | -05 | 08 | -12 | -12 | -14 | 21 | -05 | 15 | -16 | 01 | -07 | 24 | -28 | -08 | 07 | 23 | 05 | 00 | 77 |
| 23 | -30 | 28 | 17 | -06 | 01 | 07 | -21 | 17 | -05 | -26 | 10 | 00 | 20 | -08 | 37 | 21 | 08 | -02 | -19 | 18 | 07 | 03 | -01 | 21 | -10 | -18 | -11 | -03 | 77 |
| 24 | 16 | 04 | 11 | 08 | 12 | -15 | 09 | -21 | 24 | -07 | -15 | -23 | 04 | -01 | 16 | 15 | 19 | 09 | -02 | -16 | 23 | -32 | -27 | -06 | -16 | -18 | 06 | 08 | 70 |
| 25 | -29 | 21 | 24 | 13 | 13 | 00 | -18 | -15 | 03 | -17 | 14 | -06 | 27 | -01 | -18 | 02 | 15 | 01 | -04 | 30 | -04 | -13 | 19 | -02 | 17 | -22 | 08 | 14 | 70 |
| 26 | 10 | 32 | -12 | -22 | 29 | 05 | 16 | 08 | 24 | -15 | 27 | 00 | -01 | 02 | 22 | 12 | -03 | 07 | 10 | -10 | 12 | -19 | 21 | -04 | 13 | -29 | 23 | 04 | 79 |
| 27 | 08 | 18 | 26 | 08 | 03 | -25 | -06 | -19 | 20 | -04 | -11 | 24 | 11 | 05 | -12 | 28 | 10 | -09 | 04 | -02 | 07 | 03 | 18 | 46 | -14 | -01 | -07 | -17 | 76 |
| 28 | 09 | -21 | 03 | 00 | 28 | 02 | 04 | 03 | -08 | -20 | 07 | 05 | -05 | -06 | -11 | 16 | 37 | 11 | -10 | -14 | 29 | -11 | -01 | 11 | 08 | 21 | -17 | -18 | 63 |
| 29 | 03 | 00 | -16 | 17 | 09 | -05 | 12 | 10 | -27 | -41 | 11 | 10 | -16 | 01 | -04 | 01 | 11 | 10 | -06 | -09 | 11 | -21 | -20 | -05 | 10 | -34 | -08 | -17 | 68 |
| 30 | 68 | 13 | -08 | 11 | -04 | 05 | -01 | 10 | 14 | 13 | 09 | -21 | 00 | 03 | 06 | -09 | -18 | 06 | 06 | 01 | -07 | 01 | 05 | -07 | -05 | 05 | 08 | -17 | 71 |
| 31 | -09 | 00 | 02 | -11 | -16 | 07 | -02 | -25 | 03 | -36 | -16 | -22 | 11 | -09 | -16 | -01 | -20 | 01 | -04 | -09 | 01 | -42 | 14 | -13 | -12 | -19 | 04 | -23 | 73 |
| 32 | -11 | -05 | -37 | 21 | 17 | 16 | 05 | -18 | 07 | -09 | 08 | 05 | 03 | -04 | 06 | 28 | -12 | 14 | -01 | -12 | -13 | -03 | -03 | 19 | -21 | 11 | -05 | -19 | 59 |
| 33 | 04 | -17 | -24 | -03 | 04 | 20 | -16 | -13 | -25 | 26 | -17 | -08 | 10 | 35 | 00 | 02 | -16 | 23 | -05 | -05 | 12 | 13 | 10 | -08 | 27 | 09 | -29 | 23 | 82 |
| 34 | 15 | 04 | 13 | -01 | -04 | 29 | 04 | -02 | -31 | -02 | -03 | 21 | 10 | 08 | -23 | -17 | 26 | -23 | -19 | -03 | 13 | 34 | -19 | -02 | 03 | -07 | -12 | -16 | 71 |
| 35 | 04 | 12 | 09 | -17 | 01 | 16 | -09 | -27 | -32 | -15 | -11 | 10 | 25 | 08 | 23 | -18 | 40 | 16 | 05 | 09 | -06 | -14 | -03 | -12 | -17 | -03 | -07 | 04 | 73 |
| 36 | 06 | 07 | 01 | -12 | -01 | 03 | 00 | 09 | -16 | -46 | -18 | 13 | -06 | -20 | -05 | -09 | 04 | -18 | -06 | 08 | 11 | 14 | 03 | -16 | -09 | -34 | -07 | -18 | 64 |
| 37 | 19 | -09 | 29 | -17 | 04 | 04 | 12 | 04 | 19 | -05 | -05 | 16 | 02 | 09 | 02 | -27 | 24 | -09 | 39 | 08 | -06 | 14 | 01 | -03 | -10 | -34 | -05 | 07 | 71 |
| 38 | -04 | -28 | 13 | -10 | 05 | 11 | -07 | 34 | 28 | -10 | -19 | 00 | -12 | 05 | 13 | -28 | 20 | 15 | 31 | 24 | -04 | -02 | -09 | 03 | 02 | -12 | 01 | -13 | 74 |
| 39 | 50 | 02 | 01 | 00 | 05 | 26 | 02 | 03 | 08 | 01 | -05 | -02 | -04 | 16 | -02 | -23 | 28 | -06 | 03 | -01 | -36 | 09 | -08 | 23 | 01 | -07 | 08 | 11 | 72 |
| 40 | -06 | -03 | -14 | -12 | 04 | -09 | -18 | 35 | 04 | 10 | 04 | 18 | 05 | 05 | 04 | 11 | -18 | 19 | -35 | -22 | -16 | 34 | -11 | -11 | -11 | 13 | -04 | -27 | 76 |
| 41 | 34 | 00 | 10 | -35 | 13 | 03 | -05 | -21 | 17 | 29 | 08 | 29 | 03 | 05 | 12 | -04 | -01 | -11 | 11 | -15 | -07 | -05 | -12 | 03 | 06 | 33 | -15 | 01 | 75 |
| 42 | -20 | -08 | -30 | 08 | 03 | -03 | 01 | 15 | -04 | -38 | 06 | 00 | 06 | 11 | -30 | -29 | 26 | -06 | -02 | 12 | -09 | -07 | -17 | 12 | -09 | -15 | -04 | 27 | 75 |
| 43 | -04 | -18 | -08 | 16 | -21 | 09 | -13 | 19 | 14 | -47 | 03 | 01 | -07 | 10 | -27 | -06 | 13 | 03 | -02 | 01 | 13 | -28 | 28 | 08 | -04 | -13 | -14 | -04 | 75 |
| 44 | -04 | -14 | -18 | 06 | 26 | 23 | 04 | -07 | -19 | 04 | 00 | 10 | -02 | -19 | 11 | 10 | 00 | 00 | 42 | -17 | -04 | 25 | 10 | 25 | -01 | -02 | -10 | 18 | 68 |
| 45 | 34 | 15 | -05 | -13 | -07 | 21 | 05 | -06 | 09 | -52 | -10 | 06 | -08 | 01 | -02 | 00 | 12 | 20 | -30 | 04 | 09 | 05 | 09 | 01 | 16 | 06 | 19 | 05 | 75 |
| 46 | 40 | 15 | -10 | 02 | 03 | 21 | 05 | 07 | 00 | -44 | 14 | 16 | 17 | 21 | -11 | 01 | 06 | 09 | 09 | 27 | -03 | -02 | -04 | -10 | 10 | 08 | 03 | -23 | 75 |
| 47 | 06 | -07 | -04 | 01 | 05 | -24 | 09 | 29 | 04 | -48 | 02 | 08 | 01 | 13 | 11 | 13 | -01 | -26 | -11 | -02 | -03 | -03 | 35 | 21 | 10 | -03 | 29 | 01 | 74 |
| 48 | -16 | 03 | 17 | 10 | 03 | 09 | 03 | 13 | 07 | 36 | -10 | 04 | 00 | 05 | -20 | 11 | 47 | 12 | 04 | -05 | 03 | 04 | -28 | -01 | 14 | -11 | 01 | -30 | 73 |
| 49 | -16 | 00 | -12 | 09 | -17 | -02 | 02 | -11 | 21 | 36 | 09 | 16 | 08 | 08 | 02 | 17 | 34 | 14 | -01 | -21 | 00 | 04 | -33 | -19 | -08 | -36 | 05 | -21 | 84 |
| 50 | -23 | 05 | -10 | 03 | -15 | 06 | -13 | 01 | 22 | 41 | 01 | 17 | -02 | 00 | 00 | 09 | 35 | 14 | -10 | -18 | -09 | 08 | -27 | -10 | -03 | -37 | 07 | -25 | 85 |
| 51 | 37 | -34 | 00 | -27 | 10 | -03 | -14 | -19 | -09 | -14 | 00 | 12 | 10 | -03 | -11 | -19 | -02 | -12 | -13 | 12 | 05 | -14 | 19 | 08 | -30 | -08 | 20 | -18 | 76 |
| 52 | -04 | 18 | -11 | -03 | -20 | -06 | -20 | -11 | -29 | -27 | 06 | -23 | -30 | -16 | 06 | 15 | -12 | -05 | 20 | -07 | 10 | 37 | 17 | -15 | -13 | -10 | 00 | -14 | 81 |
| 53 | 15 | 13 | 07 | -18 | -07 | -25 | 21 | 20 | -04 | -21 | 08 | -19 | -15 | 11 | -12 | 04 | 15 | 11 | 21 | -32 | 04 | 03 | 19 | -16 | -05 | -20 | 04 | -17 | 68 |
| 54 | 00 | -19 | -11 | 18 | -08 | -20 | -02 | -27 | 00 | -19 | 07 | 05 | 01 | 08 | 06 | 17 | -10 | 20 | 12 | 31 | -21 | 26 | 23 | 14 | 06 | -27 | -14 | -20 | 76 |
| 55 | 409 | 07 | -05 | -18 | 47 | 03 | -02 | 11 | 04 | -01 | 03 | 28 | 15 | -16 | -11 | 11 | -30 | 05 | 28 | 04 | -02 | 07 | -24 | -19 | -25 | 04 | 00 | 07 | 77 |
| 56 | 01 | 05 | -07 | 10 | 06 | 09 | 12 | -03 | -14 | -49 | -02 | 13 | 08 | 01 | 06 | 07 | -29 | 26 | 18 | -24 | -04 | 25 | -06 | -14 | -03 | -07 | 21 | -05 | 73 |
| 57 | 34 | -04 | -04 | 24 | -10 | -15 | -04 | -08 | 07 | -24 | 01 | -04 | 00 | -09 | -28 | 20 | -20 | 03 | 26 | -17 | -19 | 08 | 08 | -08 | 03 | 04 | -30 | -21 | 73 |
| 58 | 23 | -05 | -10 | -01 | 24 | -12 | -02 | -17 | 28 | -19 | -03 | -22 | 02 | -05 | 34 | -10 | 30 | 01 | -16 | -16 | -10 | -07 | 31 | -04 | -06 | 06 | -07 | 02 | 72 |
| 59 | -08 | -06 | -13 | -05 | 05 | -11 | -03 | 19 | -11 | -31 | 02 | -10 | 44 | -14 | -01 | -08 | 20 | -03 | -03 | -40 | -13 | 11 | 11 | -15 | 02 | 24 | 01 | 10 | 75 |
| 60 | 06 | -02 | -21 | -19 | 17 | -14 | -11 | -10 | 12 | -13 | -10 | -04 | -05 | 20 | -09 | 34 | -04 | -02 | 31 | 17 | 03 | -13 | -26 | -23 | 16 | -30 | 02 | 07 | 75 |
| 61 | -21 | -20 | -21 | -17 | 08 | -20 | 15 | 00 | 08 | 29 | 04 | -07 | 25 | 01 | 06 | 27 | 06 | -26 | 03 | 13 | -14 | -04 | -14 | 04 | 00 | -16 | -14 | -11 | 65 |
| 62 | 10 | 02 | 28 | 20 | 24 | -12 | -20 | 17 | -05 | -27 | -16 | 04 | -17 | 13 | -04 | 27 | -03 | -10 | 01 | -35 | -15 | -13 | -07 | -17 | -06 | -07 | -12 | 25 | 79 |
| 63 | 07 | -14 | 44 | 10 | -12 | 00 | -13 | 01 | -09 | -17 | 03 | 24 | -04 | 12 | 15 | -13 | -05 | 01 | 05 | -11 | 05 | 01 | 26 | -41 | -12 | 21 | -13 | 16 | 77 |
| 64 | 06 | 09 | 24 | 03 | 09 | 27 | -04 | -02 | -06 | -32 | 19 | -39 | 05 | 11 | -13 | 03 | 07 | -18 | 00 | -27 | -26 | -04 | -02 | -05 | 10 | 10 | 05 | 24 | 74 |
| 65 | -16 | 08 | 05 | -10 | 26 | 20 | 13 | -24 | 05 | -05 | -02 | -28 | -15 | 02 | -19 | 00 | 26 | -19 | -08 | 00 | -11 | 36 | 10 | -18 | -15 | -03 | -16 | 10 | 73 |
| 66 | -07 | -30 | -01 | 01 | 25 | -01 | 22 | -02 | 19 | -23 | 00 | -06 | -05 | -09 | 07 | -03 | 34 | 25 | -27 | 00 | 14 | 33 | 14 | -01 | 09 | 01 | 03 | 10 | 74 |
| 67 | 11 | 11 | 04 | 07 | -04 | -27 | 06 | 09 | -23 | -14 | -11 | -22 | 07 | 10 | -01 | -05 | 35 | 00 | -03 | 27 | -04 | 02 | -36 | 06 | -11 | 40 | -01 | -26 | 84 |
| 68 | 10 | 16 | -16 | 05 | -13 | -12 | 06 | -03 | 17 | 01 | 13 | 17 | 18 | 12 | 04 | -18 | -26 | -15 | -27 | -08 | 02 | 15 | 41 | -02 | -09 | -35 | -08 | 12 | 77 |
| 69 | 13 | 11 | 00 | 04 | 02 | -20 | -03 | 03 | -18 | -03 | 01 | -31 | -10 | -10 | -06 | 04 | 31 | 09 | 06 | 24 | -12 | -14 | -34 | 01 | -07 | 54 | -04 | -27 | 92 |
| 70 | 09 | 09 | -03 | 08 | 03 | 07 | -11 | -09 | 16 | -21 | 06 | 21 | 15 | 15 | -23 | 07 | -05 | 03 | 12 | -28 | 35 | 12 | -05 | 04 | -19 | 35 | 33 | -12 | 79 |
| 71 | 15 | -05 | -10 | -06 | 04 | 33 | -10 | 13 | 13 | -17 | -19 | -02 | 01 | -11 | 06 | 17 | -01 | 09 | -05 | -32 | -20 | -07 | 02 | 25 | -15 | -01 | 05 | -39 | 70 |
| 72 | 10 | -04 | 20 | 05 | 21 | -16 | 03 | 06 | -17 | 07 | -21 | 27 | -09 | -02 | 00 | 03 | -24 | -05 | -09 | 00 | -18 | -12 | 12 | 04 | 31 | -11 | 21 | -40 | 73 |
| 73 | 11 | -03 | 22 | -16 | 18 | -22 | 12 | -09 | -46 | 00 | -09 | 11 | 15 | -05 | -02 | 15 | 05 | 06 | -14 | -01 | -28 | -17 | 21 | -04 | -01 | -19 | 09 | -30 | 78 |
| 74 | -15 | 15 | 21 | 18 | 36 | -29 | -20 | -19 | 00 | -02 | 06 | -06 | -07 | 08 | -14 | -17 | 05 | 22 | 06 | -12 | -05 | 18 | 19 | 14 | 15 | -07 | 31 | 18 | 80 |
| 75 | -33 | -11 | 13 | 08 | -01 | 09 | -07 | 02 | 05 | -34 | 04 | 05 | 01 | -07 | 10 | 13 | -18 | -07 | 15 | 03 | 08 | -02 | -61 | -04 | -06 | 04 | 13 | 16 | 80 |
| 76 | -07 | -08 | 29 | 16 | 02 | 00 | 22 | -13 | 01 | -05 | -05 | 34 | -03 | 02 | 12 | 10 | -06 | -22 | -06 | -19 | 00 | -37 | -35 | 00 | 07 | 16 | -03 | 27 | 79 |
| 77 | 55 | 03 | 01 | 07 | 08 | -10 | -01 | 11 | 18 | 40 | 10 | -07 | 14 | -15 | 02 | 05 | -11 | -08 | 01 | 20 | 11 | 06 | 13 | -17 | 14 | 13 | 03 | -11 | 76 |
| 78 | -24 | -01 | 01 | 05 | 04 | -09 | 00 | -11 | 19 | -19 | 05 | -07 | 02 | 03 | 08 | -57 | -20 | -10 | 00 | -11 | -01 | -01 | -21 | -03 | 09 | 03 | -06 | -47 | 96 |
| 79 | -18 | 02 | -06 | 06 | 08 | -07 | 06 | -03 | 15 | -19 | 07 | -08 | 11 | 03 | 03 | -67 | -20 | -12 | 02 | -13 | 03 | 03 | -25 | -07 | 02 | 04 | -09 | -44 | 93 |
| 80 | -22 | -05 | 05 | -03 | 07 | -03 | -05 | -23 | 21 | -22 | 05 | 03 | 05 | 02 | 12 | -49 | -16 | -08 | 04 | -12 | -03 | 05 | -14 | 01 | 18 | 04 | -08 | -54 | 87 |

Note: Decimals have been omitted

# Table XIX

### Rotated Factor Matrix and Communalities
### For Urban General Practitioner Sample

| Variables | Factors | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | $h^2$ |
| 1 | 07 | 09 | 04 | -07 | -01 | -06 | 04 | -01 | 02 | -03 | 71 | 18 | 04 | 08 | -08 | -07 | 09 | 21 | -02 | -13 | 08 | 03 | -04 | 11 | 21 | -03 | 02 | 05 | 72 |
| 2 | 37 | -19 | -08 | 18 | 09 | -12 | 09 | 11 | -30 | 09 | -09 | -28 | -35 | 13 | -09 | -04 | -03 | -04 | -02 | -01 | 10 | 02 | 09 | 23 | 04 | 06 | 03 | -01 | 67 |
| 3 | 64 | 01 | -20 | 09 | -10 | 07 | 01 | 01 | -08 | 18 | 18 | 02 | -16 | 05 | 12 | 10 | 02 | -03 | 11 | -12 | 00 | 09 | 02 | -03 | 04 | 14 | -17 | 20 | 72 |
| 4 | 21 | 01 | -09 | 02 | -08 | 09 | -13 | 00 | -15 | 15 | 10 | 11 | 05 | -11 | 02 | -08 | 10 | -04 | 12 | -01 | -04 | -03 | -06 | 72 | 03 | 19 | 04 | -07 | 77 |
| 5 | -14 | 12 | -04 | -14 | -36 | -01 | -14 | 16 | -25 | 06 | 14 | -29 | 03 | 12 | 36 | 04 | -01 | 16 | 22 | 13 | -08 | -11 | 02 | 19 | 08 | -02 | -24 | -05 | 76 |
| 6 | -18 | 18 | -23 | -12 | -12 | -18 | 08 | -03 | -10 | -27 | -06 | 22 | 15 | -07 | -09 | 09 | 00 | 41 | 18 | -15 | 10 | 00 | -07 | 01 | 15 | 02 | -36 | 02 | 76 |
| 7 | -03 | -18 | -08 | -02 | 03 | -05 | 01 | 05 | -05 | -19 | -12 | -11 | -20 | 15 | -01 | 03 | -08 | 19 | 56 | 15 | -23 | 23 | -25 | 00 | -05 | -13 | 00 | -03 | 74 |
| 8 | 20 | 01 | 10 | 00 | -01 | 01 | -02 | 01 | -04 | 01 | -02 | -15 | 11 | -02 | -05 | 07 | -06 | 03 | 75 | 03 | -04 | -11 | -12 | 07 | 07 | -04 | -07 | 05 | 71 |
| 9 | -42 | -07 | -35 | 03 | -08 | 40 | 06 | -03 | 01 | 19 | 21 | -12 | -05 | 11 | 13 | -13 | -08 | -08 | 19 | 18 | -06 | -15 | -01 | 01 | -06 | 13 | -02 | 00 | 75 |
| 10 | -17 | 13 | -05 | 10 | 11 | 02 | -03 | -03 | -11 | 03 | -15 | 78 | -08 | -10 | -03 | 01 | -02 | 09 | -10 | -14 | 02 | -02 | -05 | -07 | 03 | 11 | 10 | -08 | 80 |
| 11 | 18 | -10 | 05 | -04 | -06 | -01 | 03 | -10 | 11 | -12 | 04 | -77 | -02 | -05 | 10 | -07 | 02 | -10 | 22 | 06 | -02 | -03 | 00 | -02 | -04 | 05 | -06 | -04 | 76 |
| 12 | -04 | -16 | 04 | 05 | -07 | -12 | -20 | 07 | -16 | 05 | 13 | 11 | 41 | 07 | 28 | -02 | -27 | 01 | 26 | -11 | 12 | 42 | 02 | -02 | -04 | -09 | 13 | 05 | 78 |
| 13 | 06 | 01 | 11 | 01 | -09 | -29 | -05 | 20 | -28 | 02 | 10 | -16 | -15 | 03 | 34 | -27 | -14 | 09 | 10 | -08 | -19 | -13 | -36 | 08 | 05 | -12 | -02 | 08 | 73 |
| 14 | -04 | 07 | -11 | 03 | 08 | 02 | -03 | -07 | -06 | 07 | 02 | 15 | -04 | -19 | 04 | -11 | 03 | 03 | 09 | 01 | -03 | -02 | 02 | -08 | 12 | 02 | -08 | -14 | 76 |
| 15 | 39 | 03 | 07 | -22 | 03 | 14 | 07 | 10 | -08 | 08 | -06 | -08 | -01 | 05 | 07 | -53 | 02 | 07 | 02 | 10 | -15 | -04 | 14 | 26 | -16 | 15 | -20 | 18 | 80 |
| 16 | -09 | 05 | 06 | 05 | -06 | 07 | -02 | 08 | -04 | -07 | 06 | 00 | 08 | 00 | 08 | -84 | -02 | -08 | -04 | -02 | 04 | -09 | -02 | 04 | 06 | -13 | 04 | 03 | 81 |
| 17 | 11 | -15 | -01 | -02 | 05 | 01 | 07 | -20 | -03 | -02 | -01 | -03 | 00 | 09 | 02 | -73 | 18 | 06 | -01 | -02 | -01 | 09 | -15 | -03 | -04 | -05 | 00 | -07 | 71 |
| 18 | 07 | 14 | -12 | 12 | 08 | -04 | 03 | -08 | -04 | -11 | 27 | -09 | -06 | 11 | -20 | -50 | -09 | -30 | 05 | 34 | -05 | -15 | -29 | 07 | -07 | -06 | -06 | 09 | 82 |
| 19 | -07 | 07 | 09 | 11 | -20 | -26 | 06 | 05 | 12 | 14 | 01 | -08 | 18 | -16 | -05 | -24 | 03 | 07 | 15 | -20 | -04 | -02 | -66 | 14 | -01 | -10 | -12 | 06 | 85 |
| 20 | 07 | -15 | -10 | 15 | 04 | 28 | 21 | 41 | 03 | 00 | 18 | -03 | -07 | 02 | -13 | -06 | -02 | 24 | 10 | -29 | -18 | 14 | -24 | -12 | -14 | -17 | 04 | 08 | 74 |
| 21 | -01 | -03 | 01 | -04 | 27 | 18 | 13 | 05 | -10 | -22 | -02 | -06 | -08 | 17 | 04 | -03 | -08 | 00 | 15 | 01 | 02 | 05 | -64 | -03 | 03 | 01 | 01 | -11 | 69 |
| 22 | -23 | 03 | -26 | -07 | 12 | -07 | -14 | 07 | 00 | 06 | -02 | 16 | 01 | -27 | 19 | 01 | -04 | 13 | 13 | 01 | 00 | 18 | -48 | -33 | 18 | 01 | -09 | -07 | 77 |
| 23 | -22 | 07 | 04 | 13 | -09 | -14 | -05 | 27 | -05 | -06 | -08 | -14 | 14 | 33 | 06 | 38 | 29 | 04 | 00 | 11 | 21 | -05 | -25 | 09 | -04 | -15 | 19 | 09 | 77 |
| 24 | 03 | 16 | -08 | -11 | -06 | -14 | 09 | 20 | 28 | 18 | -06 | -08 | -15 | 07 | -07 | -21 | 27 | -18 | 44 | -10 | 01 | 23 | 01 | -06 | 09 | -04 | -02 | 03 | 70 |
| 25 | -13 | 02 | -04 | 08 | -01 | -07 | 09 | 09 | -04 | -02 | -04 | 04 | 02 | -06 | -16 | 18 | 19 | 09 | 07 | 02 | -04 | -01 | 01 | 02 | -07 | 00 | 73 | 05 | 70 |
| 26 | 12 | 76 | 03 | 08 | 11 | -04 | 04 | 03 | 14 | -08 | 00 | 03 | -03 | 12 | -02 | 12 | 11 | -01 | 04 | 10 | -01 | 07 | -09 | 07 | -27 | -08 | 05 | 01 | 79 |
| 27 | -01 | 01 | -03 | -14 | -05 | -81 | 05 | 13 | -02 | 02 | 07 | -01 | -06 | 02 | 02 | 12 | -01 | 03 | 01 | 04 | 04 | 00 | 00 | -06 | -02 | 12 | 08 | 10 | 76 |
| 28 | -07 | 21 | -05 | -15 | 00 | -14 | 16 | -10 | -14 | -01 | 20 | -06 | 05 | 02 | -21 | 15 | -04 | -10 | -02 | -03 | 06 | 41 | -01 | 23 | 34 | 06 | -10 | 06 | 63 |
| 29 | -22 | 36 | -08 | -01 | -08 | 17 | -03 | 14 | -16 | 09 | 10 | -05 | -08 | 26 | -35 | -16 | -02 | 20 | 08 | -03 | 07 | 07 | -07 | 22 | 10 | 21 | -03 | -08 | 68 |
| 30 | 72 | 06 | 07 | -13 | -07 | 03 | -06 | 02 | 10 | -09 | 03 | -08 | -04 | 04 | -01 | -17 | -04 | 07 | 05 | 06 | -20 | -16 | -06 | 04 | 03 | -02 | -15 | -03 | 71 |
| 31 | -10 | 03 | -21 | -04 | -05 | 01 | -18 | 11 | 14 | -10 | 01 | -04 | -03 | -24 | -46 | 13 | 32 | -01 | 29 | 00 | -04 | -12 | 02 | -06 | -13 | 17 | -03 | -24 | 73 |
| 32 | -09 | -05 | -29 | -11 | 18 | -11 | 07 | -01 | 25 | 07 | 04 | 02 | -03 | 19 | -11 | 19 | 01 | 33 | -06 | 21 | -10 | 10 | 08 | 14 | 00 | -08 | -27 | -02 | 59 |
| 33 | 03 | -08 | -10 | 04 | -06 | 16 | 04 | -82 | -04 | -06 | -03 | -10 | 00 | 08 | 05 | -08 | 04 | 04 | 02 | -02 | 03 | 03 | 06 | 03 | -14 | -09 | -04 | 14 | 82 |
| 34 | 01 | -09 | 00 | -08 | -07 | -03 | -03 | -07 | -79 | 11 | 03 | -01 | 03 | 04 | 02 | -03 | 10 | -03 | -09 | -03 | -12 | 06 | -03 | 09 | 00 | 04 | -03 | -05 | 71 |
| 35 | -14 | 04 | 10 | 02 | -02 | 02 | 00 | -07 | -14 | 05 | 16 | 02 | 05 | 02 | 03 | -10 | 76 | 04 | -09 | -10 | -06 | -01 | 01 | 06 | 15 | 01 | 09 | 03 | 73 |
| 36 | -10 | 09 | 12 | 06 | 07 | 01 | -37 | 25 | -41 | -10 | 05 | 10 | 02 | 09 | -22 | -02 | 15 | 06 | 13 | -03 | 11 | 08 | -16 | 06 | -13 | 17 | -06 | -11 | 64 |
| 37 | 00 | 16 | 60 | 08 | 08 | -16 | 00 | 15 | -22 | 08 | 09 | -01 | -06 | -17 | 11 | -19 | 13 | 03 | 08 | -14 | -17 | 03 | 10 | -03 | -17 | -02 | 03 | -06 | 71 |
| 38 | -05 | -02 | 80 | 05 | 01 | 09 | 04 | 02 | 00 | 06 | 02 | 00 | -06 | -02 | -12 | 06 | 01 | 02 | 06 | 01 | 04 | 09 | -04 | -01 | 10 | -02 | -05 | -17 | 74 |
| 39 | 20 | -04 | 33 | -02 | -15 | -05 | 15 | 01 | -13 | 01 | 10 | 07 | -03 | 07 | 05 | -26 | 09 | 01 | -06 | 15 | -59 | 01 | -10 | 05 | 02 | 02 | -08 | 08 | 72 |
| 40 | 12 | -14 | -09 | -07 | 22 | 08 | -09 | -11 | -04 | 27 | 04 | -18 | 36 | 27 | 05 | 19 | -24 | 02 | -18 | 04 | 07 | 02 | -29 | -21 | -04 | 11 | -23 | -06 | 76 |
| 41 | 18 | 09 | -02 | -06 | 26 | -24 | 26 | -23 | -06 | 02 | 31 | 10 | -09 | -22 | 29 | -05 | -04 | -27 | -06 | -09 | -20 | -13 | -12 | -03 | 05 | 01 | -18 | -06 | 75 |
| 42 | -40 | -03 | 10 | 12 | 09 | 13 | 07 | 20 | -14 | -05 | 10 | 13 | 17 | 09 | -41 | -31 | -04 | -05 | -03 | 22 | -10 | 09 | 01 | -02 | 07 | -20 | 17 | -04 | 75 |
| 43 | -14 | 10 | 16 | -08 | -25 | -06 | -01 | 05 | -04 | -11 | 18 | 06 | 05 | -01 | -71 | 11 | -08 | 08 | 02 | -07 | 01 | 02 | 00 | -04 | -09 | -12 | 03 | -01 | 75 |
| 44 | -22 | 03 | 11 | 00 | 25 | -11 | -07 | -16 | 02 | -12 | -04 | 02 | 02 | -01 | 19 | -05 | -06 | 18 | -15 | 11 | -14 | 09 | 23 | -46 | -13 | -11 | -18 | 17 | 68 |
| 45 | 08 | 13 | 00 | -34 | -22 | 07 | -07 | 02 | -12 | -20 | 07 | 20 | -02 | -04 | -17 | -03 | 20 | 11 | 02 | 08 | -13 | 27 | -50 | -07 | -03 | 08 | -01 | 08 | 75 |
| 46 | 25 | 24 | 13 | -27 | 03 | 06 | 12 | -01 | -27 | -15 | 18 | 16 | 04 | 07 | -18 | 04 | 15 | 43 | 10 | 05 | -12 | -11 | -20 | -04 | 19 | 03 | 03 | -04 | 75 |
| 47 | -10 | 19 | 10 | -10 | -27 | -12 | 03 | 27 | 03 | -40 | 12 | 14 | 30 | 19 | -09 | 10 | -20 | 11 | 05 | 03 | 03 | 12 | 00 | -11 | -16 | 24 | 02 | 08 | 74 |
| 48 | -01 | 00 | 19 | -03 | -02 | -07 | 13 | -07 | -20 | 64 | -20 | -01 | -07 | -02 | -01 | 13 | -07 | -13 | 02 | 07 | 00 | 06 | 07 | 07 | 30 | 10 | 08 | 04 | 73 |
| 49 | -01 | 05 | -05 | -01 | -01 | 00 | 06 | 06 | 00 | 89 | 01 | 03 | -01 | 01 | 05 | -04 | 04 | 04 | 09 | 03 | 07 | 00 | 09 | 00 | -06 | -06 | -05 | 00 | 84 |
| 50 | -03 | -05 | 06 | 05 | -04 | 02 | -01 | 04 | 00 | 89 | -02 | 06 | -02 | 07 | 04 | 07 | 01 | -09 | -05 | 12 | 04 | -02 | -03 | 03 | -09 | 00 | -01 | -02 | 85 |
| 51 | 13 | -16 | 08 | -10 | 01 | -02 | -09 | 15 | -09 | -22 | 63 | -10 | -12 | -11 | -14 | -06 | 15 | -10 | 03 | 09 | -05 | 10 | 07 | -05 | -11 | 26 | -13 | -06 | 76 |
| 52 | -07 | 03 | -12 | -03 | -05 | 01 | -84 | 02 | -04 | -12 | -02 | 03 | -01 | 03 | 04 | 06 | -01 | 15 | 04 | -07 | 03 | -05 | 02 | 12 | 00 | -05 | -06 | 01 | 81 |
| 53 | 05 | 53 | 10 | -10 | -10 | -03 | -37 | 12 | -01 | 09 | -03 | -13 | 19 | -12 | -12 | -09 | -08 | -01 | 05 | -11 | -11 | 06 | 11 | -16 | 06 | 17 | -08 | 02 | 68 |
| 54 | 01 | -05 | 04 | 25 | -11 | -24 | -20 | -08 | 09 | 01 | 20 | -05 | -08 | -01 | -02 | 06 | -06 | 66 | 02 | 08 | 06 | 10 | 03 | -02 | -11 | 08 | 11 | -03 | 76 |
| 55 | -07 | 06 | 04 | -10 | 82 | 03 | 04 | 07 | 04 | -03 | 02 | -05 | 06 | 08 | 13 | 00 | -03 | 06 | 10 | -01 | 09 | -09 | -03 | -01 | -03 | 01 | 00 | 01 | 77 |
| 56 | -09 | 01 | 06 | -25 | 21 | 19 | -19 | 09 | -04 | -20 | -07 | -01 | -02 | 05 | 01 | -02 | 10 | 64 | 10 | -01 | 07 | 01 | -16 | 00 | -03 | 09 | 04 | -03 | 73 |
| 57 | 23 | 08 | -15 | 05 | 11 | -33 | -21 | -09 | 03 | -05 | 03 | 01 | 10 | -12 | -28 | -07 | -25 | 35 | 15 | -21 | -19 | -12 | -04 | 12 | 08 | 05 | -15 | -08 | 73 |
| 58 | 23 | 15 | 02 | 10 | -16 | -14 | -04 | 04 | 33 | -12 | 16 | 15 | 17 | 12 | -04 | -03 | 26 | -11 | -04 | -06 | -21 | 48 | 02 | 03 | -04 | -03 | -03 | -10 | 72 |
| 59 | -10 | 03 | -10 | -07 | 06 | 05 | -02 | 00 | -01 | -10 | -07 | 07 | 79 | -04 | -09 | -07 | 09 | -04 | -06 | -08 | -10 | 15 | 02 | 08 | 07 | -03 | -02 | -05 | 75 |
| 60 | -10 | 26 | 09 | 04 | 21 | 07 | -09 | -15 | 14 | 12 | 18 | 20 | -13 | 08 | 01 | -07 | -05 | 12 | 62 | 05 | 03 | -09 | 00 | -05 | 01 | 07 | 11 | 12 | 75 |
| 61 | -06 | 00 | -09 | 40 | 14 | -08 | 19 | 02 | -01 | 23 | 06 | 05 | 15 | -01 | 13 | 11 | -12 | 01 | 29 | 30 | 11 | -03 | 29 | -12 | 01 | 03 | -07 | 05 | 65 |
| 62 | -16 | 09 | -02 | -03 | 12 | -12 | -04 | 04 | 11 | -05 | -04 | -06 | 09 | 35 | -15 | -04 | -13 | -13 | 22 | -53 | -28 | 00 | -10 | 08 | -02 | 18 | 03 | 22 | 79 |
| 63 | 05 | -06 | 10 | -07 | -01 | 03 | -03 | -03 | -07 | -18 | 11 | -06 | 10 | -07 | -01 | 05 | 12 | 01 | -16 | -79 | 04 | 00 | -02 | -05 | -10 | -03 | 03 | 00 | 77 |
| 64 | -10 | 10 | -13 | -07 | -11 | 13 | 02 | 05 | -04 | -22 | -10 | -07 | 21 | -04 | -04 | 10 | 02 | -08 | 16 | -17 | -65 | -02 | -04 | 11 | 08 | -11 | 16 | 03 | 74 |
| 65 | -08 | 01 | -08 | 17 | 16 | 00 | -26 | 02 | -26 | 02 | -10 | 09 | -07 | -01 | 08 | 15 | 08 | -09 | 03 | 00 | -44 | 41 | 17 | -15 | -01 | -18 | 12 | -01 | 73 |
| 66 | 07 | 03 | 12 | -03 | -06 | 06 | 03 | 00 | -03 | 01 | 00 | -01 | 11 | -05 | 01 | 01 | -03 | 11 | -07 | 03 | 02 | 81 | -11 | -02 | -01 | -06 | 06 | 03 | 74 |
| 67 | 05 | -11 | 03 | -02 | -12 | -08 | -01 | 09 | -15 | -04 | 00 | 01 | 12 | 18 | 04 | -12 | 12 | 05 | 06 | 06 | 04 | 02 | 00 | -17 | 80 | 02 | -01 | -08 | 84 |
| 68 | 20 | 00 | -12 | 07 | -09 | -18 | -08 | 00 | -12 | -08 | -07 | 06 | 09 | 11 | -13 | -19 | 02 | 04 | -09 | 04 | 07 | -01 | 02 | -27 | -68 | 04 | 05 | -06 | 77 |
| 69 | 13 | -07 | -06 | 04 | 01 | -02 | -04 | 05 | 07 | -03 | 05 | 05 | 01 | 04 | -01 | -02 | 05 | -04 | -01 | 06 | -05 | -03 | -03 | -03 | 93 | -02 | -04 | -04 | 92 |
| 70 | 00 | -04 | -13 | -80 | 13 | -19 | 01 | 02 | -06 | 01 | 11 | 05 | 12 | -04 | -01 | 04 | -06 | 03 | 04 | -06 | 00 | 00 | 01 | -03 | 04 | -13 | -05 | -08 | 79 |
| 71 | 04 | -05 | 09 | -19 | 00 | -15 | -07 | 06 | 14 | 08 | 00 | -05 | 12 | 10 | -23 | 29 | 10 | 00 | 01 | 22 | -27 | 00 | -16 | 20 | -04 | 17 | -45 | -05 | 70 |
| 72 | 11 | -04 | 04 | 00 | 00 | -06 | 07 | 00 | -01 | -04 | -01 | -01 | -11 | 06 | 04 | 12 | -16 | 05 | -03 | -02 | 08 | -09 | -04 | 11 | -05 | 77 | 03 | -13 | 73 |
| 73 | 03 | 08 | -13 | 18 | 03 | -07 | -03 | 08 | -10 | 01 | 13 | -19 | 12 | -05 | 01 | 06 | 26 | 09 | -05 | -01 | -01 | -01 | 11 | 01 | 07 | 71 | 04 | 12 | 78 |
| 74 | -14 | -01 | 02 | -23 | 02 | -14 | -13 | -06 | 22 | 00 | -03 | -14 | 01 | 03 | 13 | -16 | -13 | 00 | -18 | -02 | -18 | 22 | 06 | 04 | -06 | 19 | 62 | -05 | 80 |
| 75 | -50 | -20 | 04 | -14 | 20 | 16 | 10 | 24 | 07 | 00 | -11 | -01 | -04 | 11 | 10 | 03 | -04 | 12 | 37 | -16 | 06 | -11 | -21 | 11 | 13 | -19 | -03 | -10 | 80 |
| 76 | -31 | -01 | -19 | -03 | 01 | -06 | 53 | 17 | 02 | -04 | -08 | 10 | -17 | 02 | 11 | -11 | 00 | -13 | 12 | -43 | 00 | -08 | -09 | 09 | 02 | 08 | -14 | 02 | 79 |
| 77 | 79 | 00 | 03 | 02 | 07 | -03 | 10 | -03 | -01 | -06 | 03 | 05 | 00 | -09 | 15 | -04 | -16 | -07 | 08 | 03 | 13 | -02 | 01 | 09 | 04 | 02 | 05 | 08 | 76 |
| 78 | -06 | -03 | 06 | -01 | -03 | 06 | 01 | 06 | 00 | 00 | -03 | -05 | 00 | 04 | -04 | -03 | -01 | -01 | -04 | 02 | 02 | -02 | 00 | -02 | 02 | 01 | 01 | -96 | 96 |
| 79 | -01 | 01 | 05 | -05 | 06 | 09 | 02 | 07 | -08 | -01 | -06 | -06 | 09 | 08 | -06 | -09 | -01 | 00 | -02 | 04 | 02 | -03 | 04 | -03 | 04 | -05 | -03 | -92 | 93 |
| 80 | -10 | 01 | 07 | -02 | -03 | -05 | -04 | -02 | 01 | 03 | 07 | 02 | -05 | -01 | 04 | 13 | -01 | 05 | -02 | -01 | -01 | 03 | -07 | 06 | 00 | 08 | -02 | -90 | 87 |

# Table XX

Intercorrelation of Variables for Rural General Practitioner Sample

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 73 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | -06 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 04 | 39 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 01 | -01 | -04 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | -08 | 02 | 01 | 08 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 08 | -12 | -03 | -12 | 00 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 17 | -10 | -09 | 07 | 00 | 08 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 15 | 06 | 18 | 23 | -06 | -01 | 37 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 18 | 06 | -02 | 03 | -02 | 12 | -10 | 03 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 18 | -06 | 10 | -07 | -05 | 27 | 09 | 18 | -04 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 09 | 04 | 03 | 09 | 32 | 30 | 20 | 07 | 03 | 21 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 24 | -05 | -10 | -01 | -18 | 16 | 11 | -10 | 24 | 27 | 04 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | -06 | 04 | 07 | 07 | -06 | 04 | 16 | 23 | 06 | 13 | 20 | 02 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | -01 | 19 | 11 | 09 | 35 | 03 | -07 | 19 | -02 | 08 | 25 | -06 | 02 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | -16 | 20 | 22 | 17 | 08 | 03 | 04 | 23 | -02 | 12 | 24 | -18 | 21 | 26 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | -08 | -07 | 11 | -03 | 01 | 10 | 14 | 17 | 21 | 22 | 11 | 20 | 11 | 09 | 20 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | -03 | 01 | 05 | 01 | 04 | -07 | 24 | 13 | 05 | 00 | -01 | 14 | 01 | 04 | 10 | 52 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | -06 | -16 | -08 | 07 | -04 | -03 | -06 | 03 | 08 | 15 | 14 | -01 | 26 | 13 | 13 | 24 | 12 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | 08 | 07 | 06 | 00 | -10 | 17 | 18 | 18 | 11 | 10 | 13 | -02 | 26 | 03 | 20 | 03 | -02 | 05 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 03 | -04 | -14 | -10 | -10 | 02 | 10 | 00 | 08 | -06 | -03 | 09 | 05 | -05 | -07 | 21 | 26 | 09 | 06 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 12 | -09 | -26 | 00 | 17 | 24 | 45 | 01 | -04 | 10 | 07 | 17 | -04 | -14 | -07 | 05 | 16 | -06 | -02 | 22 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | 06 | -05 | -04 | 13 | 02 | 14 | 20 | 23 | -05 | 09 | 10 | 04 | 08 | 03 | 15 | 13 | 13 | 13 | 16 | -02 | 13 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | -09 | 16 | -09 | 02 | -06 | -04 | 08 | -17 | 10 | -16 | -05 | -07 | 19 | -10 | -05 | 01 | 03 | -06 | 17 | -08 | 19 | -08 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 19 | 08 | -01 | 01 | -08 | 00 | 13 | 03 | 14 | 08 | -17 | 11 | 07 | -07 | -12 | 02 | 12 | -22 | 12 | 09 | 09 | 01 | 14 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | -08 | 08 | 03 | -05 | 12 | 10 | -15 | -02 | 15 | 05 | 09 | 02 | -08 | 19 | 00 | 09 | -04 | 09 | -15 | -11 | -04 | -03 | -09 | -22 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | 07 | -02 | 08 | -04 | 01 | 31 | 06 | 07 | 00 | 23 | 04 | 07 | 22 | -07 | 26 | 11 | 00 | 02 | 24 | -21 | 01 | 08 | 13 | 02 | 07 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 05 | 10 | 10 | 27 | 12 | 05 | 07 | 21 | 14 | 25 | 06 | 00 | 11 | 01 | 10 | 21 | -06 | 18 | 11 | 03 | 07 | 24 | -02 | 03 | 02 | 04 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | -05 | 14 | -07 | -10 | -11 | 01 | -03 | -03 | 08 | 08 | -04 | 16 | -13 | -04 | 05 | 10 | -11 | 12 | 08 | -01 | 05 | 10 | 06 | -01 | 00 | -02 | 08 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 04 | 03 | 02 | -14 | -09 | 14 | -04 | -06 | -05 | 15 | 01 | -13 | 02 | -04 | 11 | -05 | -23 | -08 | 08 | -13 | -05 | 05 | 16 | -02 | -07 | -04 | 00 | 01 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 19 | 16 | 22 | 10 | 11 | 23 | 09 | 35 | -11 | 28 | 07 | 02 | -10 | 29 | 24 | -06 | -04 | -13 | 25 | -09 | 06 | 20 | -27 | 12 | -06 | 15 | 07 | 08 | 08 | -- | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | 03 | 04 | 07 | -11 | 09 | 27 | -13 | -24 | -01 | 05 | 04 | -04 | 09 | 04 | 21 | 02 | -01 | 04 | 03 | 08 | 00 | 02 | 05 | 08 | -07 | 03 | -01 | -13 | 27 | -05 | -- | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | 20 | 05 | 05 | 00 | -03 | 04 | -15 | 01 | 09 | 10 | -07 | -01 | -16 | 02 | 12 | -02 | 12 | -04 | -08 | 00 | 04 | 01 | -03 | 01 | 12 | 18 | 01 | -16 | -11 | 10 | 12 | -- | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | -08 | -13 | -01 | -14 | -09 | 03 | -02 | -24 | 02 | -10 | 00 | -05 | 05 | -15 | -04 | -16 | -09 | -15 | 12 | 13 | -01 | -07 | 11 | -11 | -11 | -01 | -03 | -08 | 01 | 23 | 10 | 02 | -- | | | | | | | | | | | | | | | | | | | | | | | |
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| 35 | 01 | 27 | 17 | -09 | -07 | -02 | 14 | -08 | -07 | 06 | 09 | 07 | 04 | -04 | 26 | -13 | 19 | -13 | 09 | 02 | 10 | -07 | -01 | 03 | 00 | 14 | -08 | -08 | 02 | 13 | -01 | 20 | 17 | 31 | -- | | | | | | | | | | | | | | | | | | | | | |
| 36 | 16 | -15 | 04 | 06 | 04 | 11 | 03 | -13 | 05 | 14 | 01 | 09 | 10 | -05 | 11 | -02 | -08 | 21 | 06 | -20 | 02 | -06 | 04 | 01 | -03 | 19 | -08 | 03 | 15 | 13 | -05 | 11 | -11 | 14 | -01 | -- | | | | | | | | | | | | | | | | | | | | |
| 37 | 10 | 12 | -06 | -03 | 03 | 20 | -09 | -08 | 14 | 08 | 20 | 09 | 13 | 12 | 19 | 16 | 10 | 10 | 37 | 17 | 02 | 10 | 02 | 12 | -04 | 15 | 14 | 31 | 11 | 11 | 09 | -07 | 15 | 32 | 22 | 08 | -- | | | | | | | | | | | | | | | | | | | | | | | |
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| 41 | -11 | 25 | 08 | -05 | 17 | 09 | 03 | 03 | -04 | 09 | 04 | 03 | 03 | 12 | 17 | 15 | 17 | 02 | 11 | 08 | 04 | 08 | -12 | 03 | -04 | -04 | 15 | 04 | 12 | 34 | 02 | 10 | -21 | -02 | 15 | 10 | 31 | -03 | 19 | -08 | -- | | | | | | | | | | | | | | | | | | | |
| 42 | 05 | 00 | -16 | -01 | 08 | 13 | -07 | -23 | 09 | -12 | -08 | 14 | -02 | -03 | -20 | -01 | 08 | -09 | -05 | 00 | 14 | -12 | 09 | 11 | 13 | 07 | -01 | -12 | -01 | -09 | 18 | 02 | 02 | 05 | -01 | 05 | 15 | -07 | 05 | -07 | -07 | -- | | | | | | | | | | | | | | | | | | |
| 43 | -08 | -01 | 06 | -13 | 02 | 06 | -25 | -25 | -03 | 11 | 08 | 03 | -05 | 10 | 04 | 04 | 03 | 12 | -06 | 05 | -14 | -17 | -10 | 08 | 02 | -05 | -06 | 00 | 13 | -10 | 20 | 03 | -02 | -13 | -11 | 19 | 04 | -15 | 13 | -05 | 05 | 16 | -- | | | | | | | | | | | | | | | | | |
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| 52 | 16 | -13 | 02 | 11 | 10 | 13 | 03 | 06 | 08 | 21 | 07 | 18 | 10 | 02 | 14 | 24 | 19 | 26 | -04 | -08 | 01 | 14 | -14 | -06 | 14 | 15 | 28 | -08 | 01 | 05 | 09 | 03 | -14 | 11 | -01 | 16 | 14 | -11 | 07 | 13 | 06 | 15 | -01 | 02 | 08 | 22 | -04 | -13 | -03 | 05 | -13 | -- | | | | | | | | |
| 53 | -03 | 16 | -04 | 14 | 26 | 04 | 01 | -01 | 12 | 07 | 12 | -01 | -05 | 14 | 27 | 04 | 13 | -06 | 15 | -11 | -03 | -05 | 15 | -06 | -06 | 15 | 19 | 06 | 03 | -01 | 17 | 02 | -03 | -05 | 12 | 02 | 13 | -06 | 11 | 17 | 19 | 01 | 12 | 13 | 15 | 32 | 06 | 08 | 00 | 03 | 18 | 28 | -- | | | | | | | |
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| 69 | 16 | -09 | -04 | -13 | 05 | 05 | 07 | 20 | -02 | 03 | -12 | -04 | -06 | 17 | 02 | 07 | -09 | -07 | -02 | 00 | -08 | 00 | -06 | 04 | 10 | 10 | -05 | 00 | 05 | 27 | -07 | 13 | -16 | -20 | -23 | 07 | -16 | -06 | 01 | 12 | -02 | 09 | 08 | -08 | 08 | 05 | 34 | 22 | 08 | -02 | 21 | -02 | -04 | 00 | 02 | -04 | 12 | 17 | -10 | -02 |
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| Variable | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | -- | | | | | | | | | | | | | | | | | | | |
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| 77 | 19 | 19 | -16 | -06 | -09 | 19 | 22 | -18 | 11 | 07 | 20 | -13 | 10 | 06 | -05 | -24 | -- | | | |
| 78 | -09 | -18 | -12 | -09 | -20 | -03 | 01 | -11 | -04 | 08 | 03 | -01 | -04 | 00 | 05 | 16 | -30 | -- | | |
| 79 | -22 | -21 | -10 | -02 | -16 | -07 | 06 | -09 | -03 | 07 | 07 | -03 | -05 | -01 | 10 | 12 | -27 | 09 | -- | |
| 80 | 08 | -11 | -15 | -12 | -20 | 08 | -02 | -08 | -09 | 03 | -08 | -01 | -12 | 03 | 07 | 16 | -11 | 03 | 38 | -- |

Variable

Note: Decimals have been omitted

## Table XXI

### Eigenvalues and Cumulative Proportion of Variance Accounted for For Rural General Practitioner Sample

| Factor | Eigenvalue | Cumulative Proportion of Variance |
|---|---|---|
| S | 5.59 | .09 |
| AA | 4.15 | .16 |
| BB | 3.93 | .22 |
| D | 3.37 | .28 |
| A | 3.13 | .33 |
| V | 2.98 | .38 |
| J | 2.80 | .42 |
| U | 2.59 | .46 |
| K | 2.54 | .50 |
| F | 2.41 | .54 |
| C | 2.23 | .58 |
| L | 2.14 | .61 |
| N | 2.08 | .65 |
| H | 2.01 | .68 |
| O | 1.87 | .71 |
| B | 1.73 | .74 |
| W | 1.67 | .77 |
| Y | 1.61 | .79 |
| G | 1.59 | .82 |
| I | 1.47 | .84 |
| X | 1.44 | .86 |
| T | 1.36 | .89 |
| M | 1.28 | .91 |
| Z | 1.25 | .93 |
| E | 1.17 | .95 |
| Q | 1.13 | .97 |
| P | 1.10 | .98 |
| R | 1.06 | 1.00 |

# Table XXII

### Unrotated Factor Matrix and Communalities
### For Rural General Practitioner Sample

| Variable | Factors | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | $h^2$ |
| 1 | -13 | -08 | -34 | 34 | 03 | -10 | -18 | -18 | 03 | 03 | 15 | 17 | -15 | 08 | 21 | -22 | 25 | -18 | 29 | -07 | 10 | 01 | -14 | 24 | 13 | -06 | -01 | 13 | 81 |
| 2 | 07 | -11 | -26 | -40 | 07 | -03 | 03 | 21 | -22 | -24 | -10 | 07 | -11 | -02 | -22 | 04 | 04 | 07 | 16 | 15 | -18 | 15 | -25 | 02 | -19 | 02 | -10 | 27 | 77 |
| 3 | 22 | -23 | -25 | -21 | 19 | -02 | 06 | 02 | -15 | -29 | -08 | 10 | 08 | -12 | -40 | -01 | 04 | 02 | 13 | -15 | 08 | -12 | 00 | 04 | 03 | -08 | -16 | 25 | 71 |
| 4 | 23 | 00 | -03 | 25 | -04 | -23 | -08 | 18 | 12 | -02 | 26 | -24 | 15 | -03 | 02 | -05 | 20 | -01 | 03 | 29 | -31 | -06 | 08 | -13 | -21 | -14 | -19 | -02 | 73 |
| 5 | 08 | 15 | 31 | -16 | 04 | 25 | 17 | 18 | 09 | -03 | 34 | 17 | 22 | 37 | -01 | 00 | 07 | -04 | 15 | 16 | -09 | 03 | -15 | -05 | 25 | -10 | -17 | 08 | 81 |
| 6 | -27 | 16 | 02 | 15 | 02 | 19 | -06 | -11 | -22 | -14 | 05 | -06 | -06 | -02 | -06 | 04 | -18 | -02 | 46 | 12 | 09 | -27 | -04 | -17 | 17 | 06 | 18 | -22 | 74 |
| 7 | -16 | -05 | 27 | 38 | -10 | -26 | 08 | -03 | -02 | -11 | -16 | -19 | 11 | 27 | -02 | -14 | -02 | -01 | 32 | 02 | 23 | 25 | 04 | 03 | -08 | -12 | -11 | 09 | 76 |
| 8 | 18 | 00 | 06 | 35 | -06 | -02 | -03 | -05 | -11 | -03 | -08 | -24 | 00 | -15 | -20 | -06 | 01 | -08 | 31 | -06 | 06 | 12 | 08 | 06 | -06 | -01 | -60 | 06 | 81 |
| 9 | 15 | 36 | -35 | 08 | -11 | 05 | -06 | 01 | -32 | 08 | -06 | -04 | 09 | -04 | 06 | -11 | 16 | -17 | 14 | -06 | -23 | 14 | -18 | 00 | 17 | -11 | 20 | -01 | 71 |
| 10 | 14 | -14 | -04 | 10 | -31 | 06 | -14 | -13 | -06 | 04 | -08 | 17 | 12 | -09 | 04 | -08 | -09 | 28 | 50 | 01 | 16 | -11 | 22 | 01 | 27 | 09 | 04 | -03 | 76 |
| 11 | 13 | 03 | 19 | 03 | -08 | 06 | -21 | -12 | -34 | -30 | 27 | 11 | -02 | 39 | -01 | 00 | 13 | 12 | 31 | 07 | -04 | -02 | 03 | -13 | -04 | -14 | -07 | -18 | 78 |
| 12 | -01 | -04 | -04 | 31 | 00 | 02 | -34 | 12 | -08 | 09 | -08 | 09 | -01 | -05 | 08 | -22 | -11 | 11 | 28 | -07 | 07 | 04 | 02 | -02 | -03 | -02 | 51 | 16 | 72 |
| 13 | 24 | 11 | -04 | 05 | 18 | -18 | 02 | -34 | 00 | -12 | -08 | 04 | 11 | 20 | -35 | -17 | -14 | 10 | 19 | 00 | -07 | 22 | 20 | -07 | -10 | 01 | -02 | -27 | 72 |
| 14 | 27 | -05 | 19 | -18 | -17 | 33 | -11 | -03 | 03 | -04 | 30 | 10 | -12 | 05 | -17 | -32 | 12 | -01 | 19 | 04 | -11 | -06 | -07 | -25 | -01 | 07 | -24 | 14 | 76 |
| 15 | 32 | -23 | -06 | -27 | -18 | 04 | 12 | 00 | 14 | -25 | -09 | -20 | -07 | 12 | -10 | 03 | -08 | -11 | 38 | 00 | -14 | -09 | 06 | -14 | -11 | 04 | -23 | -19 | 75 |
| 6 | 46 | -02 | 16 | 11 | -04 | 10 | 12 | -06 | -13 | 15 | -20 | -26 | 05 | -10 | -10 | 05 | 01 | 03 | 32 | -27 | 05 | 15 | -22 | -16 | 15 | -15 | 19 | -09 | 81 |
| 17 | 28 | -06 | 18 | 03 | -12 | -09 | -03 | 11 | 12 | 02 | 06 | -48 | -08 | 10 | -19 | 15 | 11 | -08 | 16 | -30 | 22 | 26 | -16 | -09 | 08 | -06 | 23 | 21 | 86 |
| 18 | 64 | 07 | 17 | 04 | 02 | -17 | 05 | -25 | -05 | 05 | 00 | 04 | -03 | 02 | 21 | 06 | 02 | 06 | 07 | -03 | 08 | -06 | -02 | -14 | 03 | 11 | 10 | -23 | 71 |
| 19 | -01 | 33 | -12 | -06 | 10 | -05 | -10 | -17 | 19 | -25 | -16 | -03 | -03 | -12 | -07 | -07 | 09 | -19 | 38 | 11 | -03 | 25 | 20 | -06 | -06 | 13 | -08 | -13 | 67 |
| 20 | 03 | -06 | 20 | -01 | -03 | 14 | -09 | -40 | -06 | 08 | -03 | -22 | -03 | -05 | 05 | 18 | -13 | -33 | 05 | 01 | -08 | 38 | -05 | 18 | -06 | -15 | 31 | 14 | 79 |
| 21 | -28 | 00 | 29 | 31 | -11 | -08 | 18 | 04 | -02 | -06 | 04 | -04 | 02 | 26 | 17 | 13 | -22 | -03 | 23 | 25 | 11 | 28 | -15 | -07 | 08 | 00 | 17 | 08 | 75 |
| 22 | 12 | 08 | 17 | 30 | 11 | 07 | 05 | -06 | 15 | -17 | -03 | -26 | -34 | -16 | 02 | 20 | 12 | 30 | 29 | 23 | 03 | 01 | 04 | 15 | 04 | 00 | -14 | -10 | 76 |
| 23 | -20 | 10 | -16 | 01 | -03 | -27 | 34 | 10 | 01 | 09 | -16 | 05 | -15 | 19 | -18 | -07 | 09 | 10 | -01 | 08 | -29 | 34 | 06 | -30 | -08 | 09 | 17 | -10 | 78 |
| 24 | -25 | 01 | -24 | 04 | -13 | -11 | -20 | -17 | 29 | 10 | -06 | -05 | 26 | -12 | -19 | 07 | 26 | 24 | 15 | 14 | 09 | 29 | -28 | 01 | -06 | -02 | 08 | 13 | 80 |
| 25 | 29 | 14 | -14 | 08 | -20 | 41 | 14 | 20 | -26 | 11 | 17 | 18 | -16 | 11 | -12 | 13 | -21 | 05 | -02 | 07 | 05 | -18 | -12 | 05 | -14 | 00 | 04 | -01 | 72 |
| 26 | -04 | 08 | -30 | 01 | 14 | 11 | 19 | 17 | 08 | -01 | -06 | -01 | 09 | 12 | -07 | -01 | -02 | 00 | 42 | -09 | 25 | 05 | 19 | -07 | -04 | 21 | 01 | -40 | 72 |
| 27 | 22 | 07 | 07 | 09 | 04 | -12 | 34 | 00 | -14 | 04 | 11 | 00 | 24 | -28 | 05 | 05 | 12 | 15 | 43 | 16 | -30 | -01 | 09 | 27 | 01 | -06 | -03 | 07 | 80 |
| 28 | 01 | 10 | 11 | 05 | -15 | 13 | 05 | 05 | -04 | -09 | -44 | 27 | -08 | -24 | 35 | 21 | 15 | 10 | 14 | -07 | -15 | 05 | -14 | -22 | -24 | 17 | 03 | 09 | 82 |
| 29 | -26 | -07 | 01 | -28 | -16 | -20 | 18 | -11 | 01 | 01 | -19 | 19 | -35 | -14 | 01 | -14 | 01 | 08 | 20 | 03 | -04 | -20 | 01 | -03 | 19 | -26 | -08 | -23 | 74 |
| 30 | -07 | -14 | -10 | -03 | 04 | 19 | -23 | 03 | 14 | -13 | 08 | 05 | -06 | -25 | 09 | -07 | -13 | -03 | 45 | 20 | 19 | 05 | -06 | -18 | 06 | -09 | -47 | 15 | 85 |
| 31 | -15 | -16 | -04 | -22 | 07 | 03 | 08 | -28 | 22 | -02 | 04 | -05 | -16 | 18 | -21 | 06 | -08 | 05 | 18 | 04 | -29 | -23 | -18 | 07 | 31 | -05 | 21 | -16 | 74 |
| 32 | 01 | -30 | -46 | -06 | 03 | 18 | 18 | 00 | -07 | 11 | 29 | -27 | -06 | 11 | 18 | 16 | 06 | -02 | 11 | 03 | 13 | 02 | 08 | -03 | 22 | 27 | 02 | 12 | 80 |
| 33 | -22 | 13 | -11 | -07 | -10 | 11 | 19 | -23 | 06 | -33 | 08 | -07 | 00 | 02 | 08 | 04 | -06 | -07 | -19 | -16 | -16 | 05 | 51 | 04 | 01 | -26 | 28 | 00 | 83 |
| 34 | -10 | -06 | -23 | 11 | 08 | -10 | 11 | 19 | 01 | -43 | -15 | 09 | 08 | -16 | 24 | 06 | -07 | 18 | 13 | -05 | 17 | 02 | -16 | -05 | -02 | -29 | 18 | -28 | 76 |
| 35 | -09 | -30 | -21 | -24 | -16 | -04 | 01 | 23 | -02 | -51 | 06 | -18 | -03 | 13 | 09 | -05 | -07 | -01 | 15 | -07 | 23 | 15 | 07 | 07 | -12 | -03 | 14 | 05 | 76 |
| 36 | 12 | 09 | -27 | -03 | 06 | -30 | -03 | -03 | 19 | 12 | 00 | 22 | 09 | 15 | 26 | 08 | -10 | -14 | 22 | 03 | 29 | -22 | 04 | -35 | 01 | -01 | 00 | -08 | 74 |
| 37 | 05 | 13 | -01 | -15 | -09 | 07 | -07 | -15 | 14 | -36 | 07 | 08 | -08 | -18 | 14 | 05 | 11 | -19 | 39 | -05 | -14 | 16 | -17 | -11 | -19 | 08 | 27 | -17 | 75 |
| 38 | 05 | 06 | -03 | -13 | 15 | 04 | 10 | -09 | -21 | -31 | 22 | -20 | -05 | -10 | 25 | -12 | -14 | 03 | -23 | -15 | 06 | 36 | -17 | -03 | -04 | 25 | -01 | 07 | 71 |
| 39 | 10 | 09 | -01 | -25 | 09 | 39 | -10 | 11 | 13 | -13 | -14 | 22 | 03 | -21 | 11 | 00 | -01 | -07 | 30 | -10 | 04 | 28 | 02 | 04 | 00 | -37 | 20 | 09 | 80 |
| 40 | -05 | -16 | -08 | 03 | -18 | 25 | -02 | 07 | -05 | 13 | -22 | 28 | 10 | 37 | 01 | -05 | 04 | 13 | 23 | -11 | -02 | 25 | -12 | 24 | -20 | 15 | 07 | -07 | 72 |
| 41 | 11 | -16 | 19 | -31 | 23 | -06 | -10 | 16 | -02 | -01 | -04 | -03 | -10 | -12 | 08 | 12 | -15 | -07 | 39 | 20 | 00 | 12 | -03 | -18 | 21 | 05 | -01 | 26 | 69 |
| 42 | -20 | 27 | -08 | 03 | 12 | 08 | 18 | 08 | 20 | 12 | 23 | -06 | 02 | 04 | -14 | -17 | -01 | -03 | 03 | 03 | 05 | -14 | -34 | -20 | -11 | -19 | 38 | 02 | 72 |
| 43 | -01 | 04 | 11 | -45 | 05 | 03 | -14 | -20 | -03 | 32 | 08 | 09 | -03 | 04 | -03 | 18 | 22 | 09 | 13 | -19 | 06 | -30 | 08 | -16 | -06 | -08 | 23 | -01 | 74 |
| 44 | 13 | 16 | 04 | -16 | 01 | -02 | -24 | -07 | 05 | -02 | -02 | -10 | -25 | 03 | 12 | -18 | -24 | 28 | -11 | 15 | -24 | 24 | 08 | 16 | -08 | 05 | 28 | 29 | 74 |
| 45 | -24 | 01 | 05 | -35 | 01 | -16 | -12 | -23 | -10 | 20 | 03 | -28 | 20 | 04 | 00 | 08 | -03 | 20 | 32 | -16 | 07 | -12 | -15 | -16 | -12 | -06 | 08 | -11 | 73 |
| 46 | -23 | 02 | 06 | -20 | 15 | 15 | -17 | 15 | 04 | -08 | 12 | -23 | 01 | -08 | -04 | 02 | 02 | -02 | 42 | -04 | -21 | -37 | -11 | 19 | -01 | 11 | -05 | -10 | 70 |
| 47 | -01 | -09 | -27 | -15 | 12 | 22 | 09 | -16 | -12 | 24 | 00 | -34 | 25 | 03 | 42 | -02 | 09 | 13 | 08 | 11 | 08 | 15 | 15 | -16 | -11 | -03 | 00 | -02 | 76 |
| 48 | -25 | -10 | -14 | -09 | -06 | -05 | 21 | -22 | -14 | [illegible] | -32 | -04 | -08 | 06 | -05 | -01 | -20 | 04 | 11 | -13 | -31 | 14 | -18 | -08 | 01 | -15 | -38 | -11 | 74 |
| 49 | 27 | 17 | -11 | -06 | 01 | -17 | 06 | -02 | 03 | 03 | -55 | -10 | -03 | 15 | -04 | -09 | 02 | -09 | -10 | 20 | 17 | -37 | -15 | 05 | 02 | -16 | 12 | 35 | 88 |
| 50 | 40 | 13 | -10 | -04 | -07 | -11 | 04 | -04 | 04 | 02 | -52 | -11 | 01 | 12 | 07 | 02 | -06 | 01 | -07 | 18 | 18 | -34 | -10 | 09 | 11 | 09 | 20 | 31 | 88 |
| 51 | -34 | -08 | -06 | -28 | 04 | -11 | -04 | 00 | -14 | 19 | -07 | -20 | 01 | 24 | 06 | -02 | 05 | -03 | 26 | 22 | -04 | 19 | -12 | 15 | 13 | -05 | -08 | 34 | 72 |
| 52 | 33 | 02 | -03 | 17 | -01 | -10 | 01 | 19 | 20 | 09 | 22 | -04 | 03 | 00 | 10 | -12 | -26 | 12 | 37 | -22 | -08 | -20 | -14 | 21 | 04 | -08 | 15 | -13 | 74 |
| 53 | 05 | 16 | -02 | -25 | -13 | -03 | 01 | 38 | 18 | 06 | 01 | -15 | 04 | 27 | 12 | -04 | 04 | 04 | 39 | -20 | -41 | -03 | 09 | 02 | 05 | 07 | -03 | 08 | 80 |
| 54 | -18 | 25 | 15 | -16 | 06 | -16 | -01 | 31 | -30 | 07 | -13 | -08 | 15 | -21 | -04 | 00 | -09 | -16 | 31 | -04 | -04 | -13 | 28 | 07 | 20 | -02 | -08 | 00 | 74 |
| 55 | -31 | -09 | 17 | -02 | -21 | 25 | 14 | -11 | 06 | -10 | -14 | 11 | 12 | -08 | 02 | -01 | 08 | -12 | 36 | 14 | 06 | -12 | -05 | 10 | 14 | 08 | 11 | -34 | 69 |
| 56 | -20 | 00 | 09 | -14 | 04 | 15 | -13 | 04 | 11 | 06 | -26 | -15 | 01 | 07 | -27 | 08 | 03 | 02 | 24 | -07 | -06 | -15 | 07 | 21 | -23 | 15 | 27 | -43 | 78 |
| 57 | 08 | 05 | -07 | 03 | -04 | -39 | -06 | -16 | 18 | 06 | 35 | 11 | -12 | 23 | 07 | 17 | -09 | -04 | 29 | -11 | 24 | -02 | 05 | 18 | -21 | -06 | -13 | -07 | 77 |
| 58 | 19 | 14 | -06 | -17 | -02 | 16 | 24 | -06 | 10 | 08 | 12 | -08 | -13 | -08 | -06 | -18 | 02 | 11 | 33 | 07 | 10 | 27 | 30 | -05 | 18 | -01 | 34 | 28 | 80 |
| 59 | 06 | 18 | -08 | 05 | 01 | -05 | 15 | 07 | 06 | 01 | 14 | 06 | -09 | -25 | -20 | 06 | 06 | -04 | 30 | 11 | 19 | 17 | -08 | 18 | 11 | 25 | 49 | -09 | 74 |
| 60 | 03 | -10 | -03 | 27 | -06 | 06 | -05 | -09 | 08 | 15 | -20 | -02 | -14 | 11 | 24 | 01 | 08 | -12 | 04 | -07 | -63 | 10 | 07 | -04 | 13 | 12 | -15 | 01 | 75 |
| 61 | 27 | -18 | -07 | 30 | 25 | 38 | 15 | -04 | 28 | 04 | -19 | 14 | 13 | 16 | 03 | 06 | -08 | -07 | -03 | -12 | -29 | -01 | -02 | 02 | 12 | -09 | -11 | 17 | 79 |
| 62 | -20 | 10 | 11 | 30 | 23 | 28 | -12 | 15 | -07 | -12 | -25 | -23 | -09 | 23 | 06 | -07 | 16 | 13 | 32 | -10 | 08 | -13 | 15 | -04 | -06 | -11 | 01 | 07 | 74 |
| 63 | 04 | -16 | -05 | 16 | 11 | 23 | -15 | 12 | -03 | 13 | -25 | -01 | -19 | 27 | -02 | 18 | 10 | -06 | 11 | 19 | 06 | -19 | 33 | -12 | -10 | -14 | 30 | 18 | 75 |
| 64 | -05 | -26 | -12 | 39 | 08 | -24 | -02 | 11 | -14 | 15 | 17 | 18 | -11 | 00 | -18 | 10 | 06 | -07 | 40 | -03 | -10 | 15 | 00 | -15 | -04 | 03 | 35 | 03 | 83 |
| 65 | 05 | -23 | -08 | 25 | 16 | -19 | 01 | -05 | -16 | | -14 | 26 | -04 | -16 | -16 | 03 | -01 | 01 | 27 | -05 | -31 | 02 | 10 | -01 | 00 | -06 | 37 | 24 | 79 |
| 66 | -04 | 12 | 33 | -24 | 29 | 02 | 07 | -16 | -07 | -08 | -01 | 45 | 07 | 32 | 01 | 05 | 05 | 05 | 08 | 00 | 18 | 36 | 00 | 08 | -01 | 08 | 04 | 17 | 83 |
| 67 | -18 | 25 | -07 | 03 | 05 | 14 | -10 | -06 | -01 | 44 | -01 | -04 | -10 | -11 | -11 | 12 | -15 | 03 | 18 | -12 | 08 | 17 | -02 | -05 | -09 | 14 | -50 | 12 | 78 |
| 68 | -03 | -30 | 25 | -13 | 04 | -12 | -17 | -07 | 07 | -07 | -20 | -01 | 20 | -07 | -04 | -28 | -14 | -10 | -08 | 01 | -15 | -05 | 00 | -22 | 05 | 27 | 46 | 11 | 81 |
| 69 | -12 | 11 | -11 | 00 | 02 | 31 | 17 | -20 | 02 | 49 | -02 | -08 | -18 | 01 | 03 | -29 | -06 | -03 | 17 | -03 | 25 | -04 | -05 | -04 | -15 | -04 | -33 | 15 | 81 |
| 70 | 24 | 12 | -30 | 10 | 05 | 09 | -14 | -24 | -18 | -21 | -02 | -05 | 12 | 22 | -07 | 03 | -13 | -18 | 20 | 24 | -13 | -19 | -13 | 12 | -23 | 01 | 07 | -31 | 79 |
| 71 | -06 | 05 | 19 | -15 | 01 | -29 | 10 | 35 | -04 | 18 | -10 | 10 | -12 | 08 | 15 | -11 | 02 | -19 | 56 | -13 | 11 | -02 | 02 | 10 | -09 | 08 | -08 | 04 | 81 |
| 72 | -03 | -20 | 21 | 07 | 07 | 04 | 20 | 05 | 06 | 29 | 05 | -05 | 02 | -27 | 07 | -07 | -14 | -03 | 23 | 18 | -14 | -09 | -06 | -03 | -55 | -13 | 13 | -02 | 79 |
| 73 | 07 | -26 | 15 | -08 | 02 | 05 | 26 | -26 | -01 | 16 | 05 | 10 | 14 | -13 | 14 | -11 | 10 | -07 | 46 | 05 | 14 | -18 | 07 | 19 | -14 | 09 | -02 | -02 | 70 |
| 74 | 02 | 02 | -12 | -03 | -29 | 17 | -09 | 14 | 16 | 22 | -05 | 15 | 19 | -08 | -36 | 16 | -17 | -07 | -01 | 12 | 16 | 33 | 20 | -06 | -07 | -07 | -02 | 25 | 75 |
| 75 | -23 | 00 | 03 | 63 | 09 | 18 | -01 | 08 | 03 | -09 | -03 | -04 | 01 | -03 | -11 | 01 | -09 | 01 | -05 | -05 | -05 | 01 | -10 | -18 | 19 | 12 | -07 | -38 | 78 |
| 76 | 05 | -17 | 17 | 09 | 03 | 18 | 19 | 04 | -08 | -08 | -09 | -11 | -17 | -04 | -16 | -20 | 25 | -08 | -44 | 01 | 40 | -01 | -02 | -01 | -07 | -01 | 27 | -20 | 81 |
| 77 | 06 | 01 | 08 | 11 | 11 | -12 | 03 | -08 | 09 | -28 | -21 | 18 | 02 | -01 | -06 | 05 | 06 | 03 | 30 | -13 | 13 | 04 | -08 | 00 | 03 | 01 | -59 | 28 | 79 |
| 78 | 25 | -12 | 02 | -20 | 03 | -05 | -13 | 13 | -01 | 27 | -11 | 02 | -10 | 01 | 03 | -03 | 01 | -03 | -10 | 11 | 07 | 30 | 00 | 07 | 11 | -11 | -13 | -71 | 93 |
| 79 | 12 | -07 | 01 | -20 | -02 | -12 | -12 | 11 | -14 | 28 | -06 | 02 | -07 | -06 | 01 | -02 | 05 | -09 | -06 | 16 | 05 | 25 | 04 | -02 | 14 | -12 | -12 | -72 | 88 |
| 80 | 26 | -08 | -05 | -16 | 21 | 10 | -12 | 19 | 13 | 19 | -13 | 01 | 04 | 05 | 09 | -07 | -03 | 06 | -18 | 04 | 04 | 40 | -09 | 13 | 05 | -03 | -04 | -57 | 84 |

Note: Decimals have been omitted

# Table XXIII

## Rotated Factor Matrix and Communalities

### For Rural General Practitioner Sample

| Variables | Factors | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | $h^2$ |
| 1 | 03 | 03 | -14 | 21 | 15 | -41 | 08 | -06 | 00 | -07 | -01 | 12 | -08 | 07 | 08 | -31 | -05 | 06 | 36 | 01 | -03 | -19 | -02 | 20 | 03 | -39 | -18 | 12 | 81 |
| 2 | -81 | 13 | -03 | 00 | -05 | 05 | -12 | 08 | 00 | -02 | -05 | 04 | 00 | 08 | -01 | 08 | 07 | -05 | 01 | -04 | 04 | -04 | -12 | -13 | -04 | -06 | 03 | 05 | 77 |
| 3 | -56 | -15 | 00 | 05 | -05 | 04 | 20 | -04 | -15 | -15 | -10 | -12 | -03 | 07 | -20 | -02 | 36 | -05 | 08 | -11 | -01 | 07 | 02 | 12 | -05 | 02 | 00 | 20 | 71 |
| 4 | -01 | -06 | 04 | 03 | -01 | -15 | 00 | 05 | 11 | 09 | 07 | 07 | 29 | 24 | -09 | -12 | -05 | 08 | 01 | 56 | -12 | 17 | -11 | -08 | -28 | -01 | 21 | -03 | 73 |
| 5 | 00 | -13 | -02 | 01 | -09 | -03 | 11 | 23 | 24 | 07 | 12 | 00 | -07 | 53 | 06 | 13 | -22 | -02 | -25 | -34 | -21 | 05 | -10 | 05 | -17 | -07 | 15 | 00 | 81 |
| 6 | 15 | 16 | -07 | -12 | 09 | 12 | 15 | 08 | 02 | -16 | 09 | 06 | -40 | 03 | -25 | 22 | -24 | 26 | 15 | 02 | 24 | 15 | -08 | 16 | 04 | -16 | -08 | 15 | 74 |
| 7 | 03 | -13 | 16 | 07 | 02 | -11 | 11 | 06 | -12 | -09 | -02 | -23 | 15 | 02 | -19 | -28 | -60 | 19 | 04 | 00 | 08 | -15 | 04 | -07 | -07 | 07 | -11 | 12 | 76 |
| 8 | -12 | -07 | 13 | 22 | -04 | -09 | 19 | 05 | -36 | 05 | 11 | -25 | 20 | 09 | -26 | -08 | -10 | 12 | -07 | 26 | -04 | 07 | -15 | 12 | -20 | -04 | -41 | 06 | 81 |
| 9 | -03 | 14 | -05 | 00 | 02 | 10 | -03 | 09 | 09 | 00 | -09 | -10 | 06 | -01 | -07 | 08 | 03 | -05 | 15 | 08 | -02 | -04 | 06 | -05 | -07 | -76 | -02 | -06 | 71 |
| 10 | 23 | 02 | -13 | -10 | -22 | 02 | 00 | 09 | -47 | -32 | -11 | -03 | -21 | 24 | -13 | 02 | -01 | 03 | 26 | 00 | 12 | -14 | -06 | 16 | -19 | -05 | -07 | 04 | 76 |
| 11 | -07 | 01 | 10 | -21 | 20 | -20 | 04 | -04 | -18 | -03 | 21 | 02 | -01 | 51 | -25 | 19 | -20 | 25 | 02 | -08 | 09 | -05 | 02 | 05 | -01 | -17 | 22 | -01 | 78 |
| 12 | 16 | 08 | 03 | -02 | -07 | 11 | -27 | 07 | 05 | -23 | -09 | -09 | 08 | -01 | 00 | -02 | -10 | 21 | 60 | 00 | 09 | -17 | -03 | 17 | 10 | -13 | 02 | 09 | 72 |
| 13 | -01 | -07 | 13 | -04 | 00 | -07 | -06 | -07 | -08 | -02 | 02 | -08 | -03 | 07 | -76 | -08 | 01 | -03 | 07 | -10 | -04 | -03 | 06 | -18 | -08 | 02 | -01 | -13 | 72 |
| 14 | -09 | 09 | 02 | 03 | -01 | 06 | -05 | 03 | -01 | 14 | 11 | -08 | -03 | 78 | -03 | 10 | 15 | -04 | -03 | 03 | -02 | 00 | -07 | 08 | 01 | 05 | -16 | 08 | 76 |
| 15 | -29 | 22 | -14 | -03 | 03 | -09 | 14 | 22 | -20 | -04 | -08 | -20 | -20 | 30 | -30 | 08 | 03 | -03 | -18 | 29 | -11 | -03 | 11 | -03 | -03 | 25 | 02 | -10 | 75 |
| 16 | 05 | 10 | 03 | -15 | 04 | 17 | 08 | -01 | -04 | -11 | -14 | -74 | -03 | 05 | -10 | 12 | -04 | 02 | 15 | 00 | -12 | 01 | -04 | 03 | -18 | -14 | -10 | -17 | 81 |
| 17 | -06 | -01 | -09 | -02 | -10 | -11 | -05 | 07 | 08 | 11 | -05 | -85 | 07 | 04 | 07 | -11 | -12 | 06 | 04 | 03 | 08 | 02 | -02 | 01 | 11 | 02 | 10 | 06 | 86 |
| 18 | 29 | 18 | -02 | -13 | 27 | -17 | -03 | -12 | -17 | -02 | -28 | -27 | 12 | 16 | -20 | 17 | 09 | -16 | 06 | -08 | -05 | 12 | -09 | -01 | -18 | 04 | 14 | -22 | 71 |
| 19 | -04 | 45 | -01 | 14 | -13 | -07 | -03 | 16 | -05 | 03 | 03 | 04 | -03 | 00 | -47 | -29 | 02 | 13 | -08 | -04 | 10 | 13 | 05 | -06 | -05 | -13 | -11 | -03 | 67 |
| 20 | -03 | 23 | 00 | -09 | -07 | 04 | -22 | -21 | 02 | 38 | 05 | -31 | -06 | -19 | -02 | -05 | -32 | -07 | 13 | -10 | -10 | 00 | 32 | 27 | -04 | -10 | -04 | -04 | 79 |
| 21 | 12 | 05 | -04 | 06 | -04 | -03 | -02 | 02 | 07 | -06 | 06 | -07 | -06 | -03 | 05 | 02 | -80 | 05 | 10 | -14 | 02 | -01 | -06 | -10 | -02 | 04 | 05 | 10 | 75 |
| 22 | 06 | 16 | -01 | 22 | 08 | -18 | -17 | -13 | -16 | -08 | 07 | -19 | -18 | -03 | -06 | 00 | -10 | 44 | -13 | 12 | 03 | 18 | -23 | 00 | -38 | 12 | -05 | 00 | 76 |
| 23 | -09 | 05 | -01 | 04 | -04 | 07 | -05 | 06 | 14 | 02 | 05 | 04 | -04 | -08 | -13 | -07 | -13 | -03 | 15 | 00 | 00 | -05 | 04 | -80 | 04 | -04 | 01 | -08 | 78 |
| 24 | -07 | 07 | -05 | -15 | -45 | -05 | -06 | -24 | 12 | -09 | 04 | -07 | -13 | -09 | 02 | -49 | -07 | -03 | 03 | 04 | 08 | -18 | -31 | -07 | -08 | -22 | -02 | 08 | 80 |
| 25 | -04 | -03 | -05 | 10 | -10 | -05 | 00 | -06 | 09 | -01 | -06 | 00 | 03 | 14 | 04 | 78 | 06 | 03 | 02 | 02 | 02 | -14 | -05 | 05 | -03 | -09 | -08 | 01 | 72 |
| 26 | 08 | 12 | -35 | 06 | -08 | -06 | 28 | 28 | 08 | -27 | 07 | -01 | -05 | -09 | -41 | 07 | 06 | 19 | 02 | -08 | 11 | -16 | -05 | -11 | -01 | 05 | -10 | -17 | 72 |
| 27 | -06 | 03 | -01 | 01 | 02 | -01 | 01 | 20 | -08 | -03 | 04 | -03 | 01 | 00 | -08 | 03 | -03 | -06 | 13 | 05 | -05 | 06 | -02 | 00 | -83 | -11 | 04 | 08 | 80 |
| 28 | 00 | 67 | 15 | -09 | 04 | 17 | 01 | 02 | -22 | -15 | -11 | 05 | 16 | -07 | 24 | 10 | -01 | 08 | 01 | -08 | -14 | -12 | -13 | -20 | -08 | 00 | -06 | 12 | 82 |
| 29 | -07 | 06 | 22 | -10 | 12 | -08 | 10 | 08 | -14 | -25 | -08 | 17 | -51 | 07 | 17 | -09 | 04 | -04 | 02 | 02 | 17 | 10 | 21 | -23 | -06 | 04 | -22 | -16 | 74 |
| 30 | -24 | 20 | -13 | 07 | -22 | -09 | 05 | 06 | -15 | -28 | 13 | 13 | -03 | 32 | 00 | -16 | -12 | 09 | 00 | 09 | -03 | 25 | -17 | 34 | 01 | 08 | -39 | 03 | 85 |
| 31 | -06 | -05 | -06 | -13 | 09 | -03 | -05 | 00 | 14 | 06 | -01 | -02 | -79 | 04 | -09 | -05 | 03 | -04 | 04 | -01 | -16 | 01 | 02 | -03 | 02 | 03 | 12 | 01 | 74 |
| 32 | -08 | -10 | -85 | 02 | 01 | -09 | 06 | -01 | -06 | 04 | 05 | -06 | -08 | 00 | 10 | 07 | 02 | -01 | 06 | 06 | -02 | 01 | -01 | 01 | 02 | -05 | -04 | 07 | 80 |
| 33 | 14 | 03 | -06 | 01 | -05 | 03 | -12 | -07 | 01 | -05 | 19 | 09 | -10 | -17 | -10 | -02 | 06 | 06 | -14 | -02 | -02 | 06 | 74 | -11 | 03 | -06 | 21 | 23 | 83 |
| 34 | -12 | 20 | 02 | 03 | 13 | -03 | 12 | -07 | 09 | -72 | 03 | 03 | -02 | -24 | 00 | -02 | -12 | 08 | 01 | 04 | 04 | 00 | 07 | 02 | -02 | -05 | 20 | -09 | 76 |
| 35 | -41 | 07 | -28 | 09 | 01 | -07 | -05 | 12 | -05 | -31 | 07 | -10 | 04 | 02 | -02 | -06 | -15 | 02 | -07 | 07 | 26 | -19 | 29 | 09 | 21 | 15 | 25 | 08 | 76 |
| 36 | 19 | 13 | -19 | -22 | -05 | -38 | 25 | 15 | 07 | -26 | -34 | 17 | 09 | 06 | -15 | -03 | -02 | -11 | 15 | -03 | -04 | 20 | -07 | -04 | 18 | 03 | -02 | -06 | 74 |
| 37 | -07 | 74 | 00 | -03 | 07 | -08 | -05 | 05 | 12 | -07 | 15 | -11 | -13 | 11 | -17 | -06 | -01 | -07 | 06 | 00 | 08 | -04 | 09 | 06 | -03 | -09 | 15 | 03 | 75 |
| 38 | -14 | 11 | -26 | 11 | 36 | 13 | -28 | -13 | 02 | -05 | 24 | -13 | 26 | -07 | -05 | 01 | -06 | -29 | -21 | -16 | 11 | 08 | 02 | 03 | 11 | -05 | -01 | 07 | 71 |
| 39 | -19 | 39 | 07 | 00 | -29 | 09 | -13 | 11 | 13 | -28 | 05 | -13 | 01 | 08 | 08 | -01 | 09 | 15 | 06 | -31 | -15 | 00 | 30 | 27 | -07 | -12 | -06 | -14 | 80 |
| 40 | -09 | 09 | -04 | -02 | -11 | -01 | -01 | 07 | -09 | -03 | 03 | 03 | -01 | 03 | -03 | 10 | -14 | 08 | 11 | -21 | -14 | -73 | -07 | -05 | 03 | -04 | -06 | -11 | 72 |
| 41 | -31 | 17 | -15 | -08 | -07 | 09 | -12 | 29 | -11 | 01 | -10 | -12 | -08 | 16 | 08 | -07 | -17 | 02 | 18 | -21 | -02 | 41 | -14 | 13 | -04 | 17 | -01 | -07 | 69 |
| 42 | 09 | 00 | 03 | -09 | -02 | 01 | 01 | -02 | 77 | -12 | -02 | -06 | -13 | 05 | 01 | 06 | -04 | 01 | 09 | 02 | 09 | 03 | -02 | -09 | 04 | -08 | -06 | 15 | 72 |
| 43 | 08 | 07 | 00 | -62 | -02 | -10 | 05 | 06 | 07 | 16 | -08 | -05 | -17 | 11 | 13 | 04 | 36 | 09 | 11 | -21 | 12 | 04 | 07 | 01 | 02 | 05 | 00 | -01 | 74 |
| 44 | -04 | 04 | 03 | 02 | -01 | 04 | -84 | 01 | 00 | 08 | -10 | 02 | 03 | 01 | -01 | -01 | -01 | -01 | 05 | -05 | 02 | -01 | 08 | -03 | 02 | 00 | 05 | 03 | 74 |
| 45 | -04 | 00 | -05 | -73 | 06 | -01 | 02 | 14 | 07 | -05 | 07 | -14 | -17 | -06 | -10 | -14 | -06 | -03 | -03 | 04 | 20 | -04 | -08 | 04 | 00 | 02 | -12 | 03 | 73 |
| 46 | -14 | 10 | -03 | -14 | 15 | 05 | 02 | 43 | 13 | 06 | 19 | 07 | -35 | 01 | -03 | -02 | 11 | 22 | -07 | 17 | 07 | -02 | -19 | 31 | -11 | 02 | 00 | 12 | 70 |
| 47 | 02 | 04 | -58 | -40 | 03 | 13 | -07 | -08 | 04 | -06 | -01 | 06 | 24 | -03 | -02 | -10 | -07 | 10 | -11 | 07 | -10 | -04 | 15 | 02 | -16 | -06 | -20 | -15 | 76 |
| 48 | -28 | -02 | 13 | -17 | 11 | 08 | 09 | 02 | -20 | -08 | 11 | 05 | -26 | -16 | -09 | -03 | -18 | -16 | -12 | 10 | -29 | -07 | 06 | -28 | 04 | -10 | -41 | -07 | 74 |
| 49 | -12 | -07 | 11 | 02 | 03 | 03 | -02 | -01 | 07 | 03 | -89 | -04 | 01 | -08 | 00 | -02 | 03 | 08 | -08 | 03 | -01 | 03 | -03 | -01 | 04 | -07 | -03 | 14 | 88 |
| 50 | 01 | -02 | -03 | 02 | -01 | 06 | -11 | 00 | -07 | -02 | -89 | -11 | -02 | -10 | 00 | 08 | 03 | 02 | -08 | 00 | -03 | 00 | -08 | 05 | -01 | -04 | 08 | 12 | 88 |
| 51 | -38 | -16 | -21 | -20 | -06 | -02 | -13 | 21 | 01 | 19 | -08 | 08 | -15 | -01 | 16 | -29 | -36 | 03 | 00 | -12 | 04 | -05 | -03 | -01 | -04 | -16 | -18 | 03 | 72 |
| 52 | 19 | -07 | 02 | 05 | 12 | -26 | -15 | 34 | 15 | -30 | -03 | -25 | -11 | 05 | -10 | 16 | 05 | -12 | 22 | 18 | -12 | -11 | -11 | 23 | -20 | 02 | 05 | -03 | 74 |
| 53 | -06 | 06 | -09 | -10 | -03 | -08 | -16 | 74 | 03 | 01 | 02 | -10 | -07 | 18 | 03 | -02 | 04 | 07 | -09 | 11 | -20 | -15 | 01 | -18 | -05 | -09 | 10 | 05 | 80 |
| 54 | -03 | -09 | 14 | -07 | -04 | 22 | 15 | 61 | -15 | 02 | 01 | 06 | 01 | -16 | -02 | 00 | -03 | 09 | 04 | -05 | 24 | 28 | 08 | 08 | -16 | -15 | -08 | -01 | 74 |
| 55 | 16 | 29 | -01 | 01 | -05 | 20 | 32 | 06 | -03 | -08 | 06 | 11 | -46 | 05 | -01 | -04 | -22 | 08 | -05 | -05 | 15 | -23 | 06 | 14 | -17 | 03 | -01 | -06 | 69 |
| 56 | 04 | 17 | 10 | -17 | -05 | 13 | 05 | 20 | 11 | 14 | 05 | -04 | -35 | -25 | -26 | 02 | 11 | 32 | -01 | 08 | 16 | -36 | -02 | 05 | 02 | 18 | 07 | -18 | 78 |
| 57 | 05 | -01 | 00 | -08 | 03 | 82 | 00 | 09 | -03 | 01 | 05 | -03 | -01 | 00 | -15 | 00 | -07 | -09 | 09 | -03 | 12 | -02 | 00 | 07 | 00 | 13 | -06 | 01 | 77 |
| 58 | 04 | 08 | -34 | 09 | -25 | 05 | -31 | 11 | 09 | -05 | -09 | -28 | -08 | 22 | -09 | -04 | 07 | 05 | 17 | -25 | 15 | 10 | 29 | -14 | -26 | -04 | -13 | 08 | 80 |
| 59 | 08 | 24 | -17 | 26 | -16 | -03 | -04 | 05 | 22 | -01 | -01 | -22 | -20 | -16 | -11 | 06 | 03 | -06 | 28 | -19 | 39 | -02 | -12 | -02 | -23 | -10 | 11 | -03 | 74 |
| 60 | 13 | 16 | -02 | 11 | 15 | 06 | -11 | 12 | -27 | 24 | 06 | 07 | -08 | 02 | 07 | -11 | -06 | 05 | 12 | 22 | -57 | -07 | -01 | -21 | 00 | -17 | -06 | -03 | 75 |
| 61 | 04 | -04 | -05 | 23 | -06 | 09 | 07 | -07 | 03 | -03 | -08 | -07 | -02 | 03 | -05 | 06 | 08 | 09 | 05 | -08 | -80 | -08 | 01 | 08 | -06 | 04 | -04 | 07 | 79 |
| 62 | 05 | -01 | 01 | -01 | 15 | 10 | 02 | 16 | 01 | -14 | 01 | -08 | 03 | 01 | -07 | -06 | -12 | 75 | 01 | -02 | -06 | -10 | -01 | 05 | 05 | -04 | -13 | 18 | 74 |
| 63 | -01 | 00 | -14 | -07 | 16 | 01 | 01 | -03 | -01 | 12 | -30 | 04 | 01 | 01 | 06 | 15 | 03 | 62 | 32 | 02 | -13 | -01 | 17 | -02 | 13 | 11 | 08 | 02 | 75 |
| 64 | -05 | 05 | -07 | 04 | 04 | -15 | 13 | 02 | 04 | 00 | 18 | -13 | -03 | -04 | -06 | 01 | -15 | 09 | 79 | 04 | 02 | -03 | -12 | -18 | -05 | -05 | 10 | 05 | 83 |
| 65 | -06 | -05 | 03 | -04 | 05 | 02 | 06 | 01 | 01 | 07 | 08 | -02 | -05 | -06 | 00 | 02 | 07 | 04 | 80 | -03 | -14 | 05 | 03 | -08 | -24 | -05 | 05 | 15 | 79 |
| 66 | -11 | 06 | 09 | -06 | -01 | -09 | 06 | -02 | 00 | 09 | 04 | 06 | 09 | 11 | -10 | -07 | -17 | 00 | -01 | -84 | -02 | -10 | 00 | -04 | -03 | 08 | 05 | 00 | 83 |
| 67 | 01 | 00 | -01 | -10 | -25 | -12 | 02 | 13 | -11 | 18 | 22 | 01 | 09 | -12 | -03 | 06 | 02 | 03 | -09 | -05 | -05 | 08 | -30 | -02 | 05 | -05 | -67 | 03 | 78 |
| 68 | 07 | 09 | 04 | -10 | 08 | 51 | 14 | 05 | 03 | 08 | -20 | -03 | -07 | 06 | -09 | -27 | -04 | -21 | 32 | -01 | 03 | -04 | 02 | 06 | 22 | 26 | 27 | 08 | 81 |
| 69 | 07 | -07 | -15 | -07 | -02 | -06 | 04 | -02 | 14 | 07 | -08 | 02 | 01 | 13 | 04 | 04 | 02 | 06 | -05 | -03 | -01 | -10 | 02 | 03 | -03 | 02 | -83 | 03 | 81 |
| 70 | -12 | 16 | -03 | -06 | 13 | -12 | 05 | -11 | 08 | 06 | -17 | 16 | -10 | 00 | -57 | 28 | -08 | 06 | 00 | 23 | -06 | -14 | -02 | 24 | -04 | -24 | 13 | -08 | 79 |
| 71 | -09 | 13 | 07 | 00 | 12 | -22 | 15 | 67 | -03 | -01 | -12 | -06 | 05 | 04 | 10 | -07 | -17 | 04 | 20 | -14 | 18 | -09 | -04 | -04 | -10 | 12 | -21 | -08 | 81 |
| 72 | -04 | 20 | 12 | -18 | 04 | 07 | 02 | 02 | 32 | 05 | 05 | 05 | 09 | -04 | 06 | 11 | -15 | 01 | 30 | 26 | -04 | -07 | 06 | 06 | -37 | 42 | -22 | -04 | 79 |
| 73 | 05 | 14 | -17 | -13 | 12 | -06 | 24 | 06 | -07 | 04 | -10 | 02 | -11 | 13 | -05 | -08 | -02 | -07 | 18 | -10 | 07 | -20 | 09 | 25 | -47 | 26 | -21 | 03 | 70 |
| 74 | -07 | -03 | 01 | 06 | -81 | 04 | -01 | -02 | -03 | 08 | 01 | -05 | 16 | 01 | -01 | 09 | -03 | -08 | 07 | -04 | 01 | -05 | 07 | -02 | 07 | 05 | -12 | 00 | 75 |
| 75 | 34 | -03 | 06 | 29 | 08 | 21 | 24 | -14 | 02 | -17 | 32 | -01 | -11 | -13 | -15 | 07 | -18 | 20 | 06 | 18 | -14 | 03 | -28 | -05 | 16 | -08 | -03 | -03 | 78 |
| 76 | 10 | -09 | 01 | 25 | 19 | 25 | 19 | -43 | 20 | 04 | -11 | -21 | 08 | -01 | 12 | 04 | 10 | 16 | -06 | -06 | 32 | -13 | 17 | -04 | 12 | 19 | 07 | -18 | 81 |
| 77 | -25 | 07 | 21 | 16 | 00 | -21 | 22 | 07 | -35 | -17 | -05 | -05 | 09 | 12 | -12 | -23 | -04 | 05 | -16 | -19 | -19 | 09 | -23 | 05 | -08 | 06 | -25 | 27 | 79 |
| 78 | 04 | -03 | 03 | 00 | 01 | -05 | 03 | -01 | -09 | -01 | 06 | -04 | -04 | -01 | -06 | 02 | 05 | -05 | -08 | 02 | 03 | -03 | 03 | -04 | 03 | 01 | 00 | -94 | 93 |
| 79 | 06 | -02 | 04 | -07 | 01 | 00 | 13 | 01 | -11 | 02 | 11 | 04 | -05 | 00 | -05 | 01 | 01 | -06 | -03 | 07 | 15 | 07 | 00 | -08 | 01 | -08 | -01 | -88 | 88 |
| 80 | 03 | -01 | -06 | 08 | -01 | 06 | 11 | -02 | 09 | -09 | 09 | -06 | 08 | -09 | -10 | -03 | 09 | -04 | -14 | -09 | -15 | -15 | -11 | 03 | 05 | 03 | 05 | -82 | 84 |

Note: Decimals have been omitted

## Table XXIV

### Coefficients of Congruency Between Factors for Combined Urban and Rural General Practitioner Sample and Urban General Practitioner Sample

| | Combined Urban and Rural General Practitioner Sample Factors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Urban General Practitioner Sample Factors | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC | DD |
| A | 81 | -04 | 11 | -02 | -04 | -13 | -29 | 14 | 10 | -04 | 06 | 31 | 07 | -06 | -14 | 06 | -08 | 09 | 17 | -06 | 02 | -13 | -09 | -10 | 19 | 05 | 15 | 00 | -04 | 13 |
| B | 11 | 24 | -17 | -07 | 25 | 21 | -07 | 45 | -37 | -01 | -13 | -14 | -04 | -26 | 00 | -06 | 10 | 06 | -25 | 25 | 15 | -21 | 19 | 02 | 01 | -09 | 08 | 06 | -07 | -01 |
| C | 08 | 12 | 36 | -74 | 04 | 05 | -01 | 13 | -06 | -10 | -06 | 12 | 12 | -11 | 09 | -13 | 10 | 02 | -08 | -10 | -15 | -07 | -03 | -17 | 17 | -01 | -08 | 00 | 17 | -10 |
| D | -08 | -23 | 10 | -09 | -42 | -15 | 12 | -14 | -01 | 02 | 15 | -16 | -01 | 03 | -05 | 14 | 63 | 06 | -05 | -15 | -03 | -10 | -14 | 08 | 12 | -24 | 06 | 07 | -01 | 10 |
| E | -07 | -01 | -06 | 05 | -07 | 73 | -13 | -09 | 13 | -04 | 03 | -05 | 00 | 07 | -13 | 20 | -22 | -02 | 14 | -12 | 02 | 24 | 01 | -03 | -05 | -23 | 02 | 06 | 02 | -01 |
| F | -17 | -05 | 00 | 04 | -01 | -08 | 27 | -13 | 08 | -16 | -05 | -12 | -04 | -01 | -05 | 20 | -03 | 03 | 19 | -01 | -69 | 13 | -11 | -07 | -14 | -11 | -14 | 04 | -07 | -10 |
| G | 10 | 20 | -02 | -19 | -18 | 19 | 34 | -66 | 37 | 01 | 12 | 00 | 09 | -35 | 01 | 08 | -06 | 06 | 00 | 01 | -11 | 00 | 07 | -15 | 08 | 02 | -07 | -05 | -07 | 04 |
| H | -10 | -07 | 04 | -23 | 21 | 06 | 16 | -03 | -45 | 25 | 12 | 11 | 04 | -06 | 00 | -12 | -06 | 05 | -22 | 30 | 12 | 24 | 12 | 15 | -06 | 05 | 18 | -16 | 05 | -15 |
| I | -06 | -22 | -43 | 02 | -21 | 04 | -06 | 03 | 36 | 49 | -14 | -07 | 04 | -14 | 13 | 33 | 15 | -10 | 03 | 28 | -04 | -04 | 09 | -15 | -04 | -04 | -13 | -04 | 15 | 04 |
| J | 13 | 12 | 09 | 01 | -28 | 00 | 12 | -01 | 16 | -13 | 85 | -15 | -03 | 02 | -07 | -08 | -05 | -08 | -02 | 03 | -03 | -15 | -22 | -16 | -05 | -23 | -04 | -02 | 02 | -01 |
| K | 18 | 21 | -21 | -15 | 20 | -10 | -08 | 06 | -24 | -11 | -05 | 65 | 01 | 00 | -05 | -11 | 00 | 24 | 14 | 00 | 20 | -11 | 09 | 01 | 13 | -16 | 12 | -05 | -10 | 04 |
| L | -09 | 07 | -06 | 07 | 11 | 13 | 03 | -06 | -20 | -02 | -05 | -06 | 26 | 09 | 01 | 17 | 13 | -08 | 17 | 06 | 10 | -14 | 09 | 02 | -04 | 02 | -05 | -04 | 02 | 05 |
| M | -14 | 11 | -24 | -02 | 10 | 11 | 01 | 31 | -14 | 07 | -17 | -23 | 05 | 35 | 14 | -01 | -11 | 04 | -07 | 03 | -03 | -04 | 21 | 29 | 15 | 25 | 05 | -07 | 03 | -02 |
| N | -07 | 14 | -19 | 12 | 06 | 06 | 20 | 01 | -11 | 01 | 10 | -04 | 07 | 14 | -11 | -11 | 03 | 09 | -42 | -08 | -29 | 24 | 07 | 00 | 09 | -08 | 09 | -05 | 09 | -05 |
| O | 21 | -20 | 23 | 09 | -41 | 20 | 18 | -18 | 49 | -18 | 08 | -16 | -06 | 35 | -02 | -39 | -13 | 01 | -09 | -16 | 15 | 05 | -06 | -14 | -11 | -08 | -04 | 03 | 16 | 04 |
| P | -10 | 03 | -21 | 14 | -05 | -01 | 09 | 06 | -02 | 13 | 01 | -01 | 03 | 02 | 16 | 13 | -02 | -87 | -20 | -21 | 09 | -01 | 00 | 07 | 05 | -06 | 14 | -05 | -12 | 01 |
| Q | -10 | -13 | -11 | -20 | 19 | -05 | 11 | 11 | -12 | -58 | -04 | 14 | 05 | -29 | -04 | 13 | 17 | 05 | -13 | 34 | 04 | -09 | 04 | 12 | -01 | 21 | 04 | -01 | -01 | 01 |
| R | -07 | -15 | -21 | 01 | 70 | 10 | -32 | 12 | -13 | 01 | -11 | -04 | -08 | 16 | -02 | -14 | 18 | -14 | -08 | -13 | 14 | 21 | 04 | -08 | 00 | -07 | 12 | -01 | 02 | -04 |
| S | 19 | 00 | -06 | -07 | 22 | 04 | -02 | 01 | -14 | 23 | 02 | -14 | -24 | 00 | -01 | -24 | 02 | 05 | -10 | 39 | 12 | 55 | 12 | 14 | -27 | -51 | -05 | -10 | -22 | 04 |
| T | 07 | 02 | -20 | 08 | -10 | -02 | 19 | 17 | -05 | 12 | 09 | 04 | 10 | -16 | -11 | -14 | 06 | 04 | -02 | -17 | -02 | 01 | -62 | -15 | 07 | -15 | -01 | -04 | 01 | -04 |
| U | -21 | -12 | 10 | 12 | -15 | 03 | 16 | -15 | -03 | 15 | 14 | -11 | 00 | 14 | -08 | 31 | -02 | -25 | -13 | -09 | -03 | -15 | -17 | -57 | -10 | -10 | 00 | 02 | -19 | -03 |
| V | -09 | 30 | -13 | -10 | 05 | -15 | 00 | 08 | -07 | -06 | -02 | 08 | 16 | 30 | -03 | 01 | 15 | -03 | -02 | 29 | 12 | 17 | 09 | 26 | 60 | 15 | -02 | 03 | 30 | 08 |
| W | -09 | -19 | -05 | 04 | -35 | -08 | 17 | 11 | 19 | 04 | 11 | -02 | 05 | -03 | -17 | 08 | 13 | -28 | 34 | -16 | -21 | -64 | -21 | 03 | -12 | -07 | 07 | 10 | 17 | 10 |
| X | 22 | 24 | -10 | -07 | -03 | -11 | -20 | 01 | -25 | -18 | 13 | -09 | -06 | -18 | -01 | -16 | -02 | 06 | -09 | 00 | -07 | 09 | -01 | 03 | -37 | 08 | 13 | -02 | -03 | -05 |
| Y | 06 | 21 | 04 | 01 | 00 | 02 | 00 | -02 | 06 | -06 | -01 | -08 | 00 | -02 | -12 | -09 | -04 | -08 | 07 | 09 | 08 | 09 | -04 | -01 | -10 | -01 | -02 | -90 | -09 | -04 |
| Z | 19 | 20 | -08 | 10 | 11 | 01 | -01 | 20 | -04 | -07 | 03 | 28 | -17 | -07 | -01 | -01 | 08 | -10 | 03 | -01 | 11 | -11 | 09 | -15 | -08 | -03 | 85 | -03 | 02 | -05 |
| AA | -29 | -15 | 23 | -04 | -07 | -13 | 22 | -14 | -13 | 01 | -08 | -13 | 00 | 02 | 05 | 35 | 12 | -06 | -10 | 02 | 06 | -06 | 00 | 17 | -01 | -11 | -04 | 03 | 70 | 06 |
| BB | 13 | 07 | 00 | 08 | -04 | -04 | 04 | -03 | 12 | -02 | 04 | -04 | 04 | 01 | 08 | -05 | 02 | 03 | -06 | -02 | 03 | -06 | 12 | 03 | 04 | -12 | 01 | 06 | 03 | 95 |

Note: decimals have been omitted.

## Table XXV

## Coefficients of Congruency Between Factors for Combined Urban and Rural

## General Practitioner Sample and R ral General Practitioner Sample

Combined Urban and Rural General Practitioner Sample Factors

| Rural General Practitioner Sample Factors | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB | CC | DD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | -57 | -10 | -01 | 21 | -04 | 16 | -03 | -06 | -24 | 38 | -27 | -46 | 01 | 25 | 26 | 07 | 12 | 08 | 11 | 00 | -01 | 13 | 13 | -01 | -09 | -08 | -11 | 01 | -11 | -09 |
| B | 17 | 58 | 04 | -39 | 29 | 39 | -07 | 10 | -10 | -20 | -05 | -01 | -06 | 08 | 03 | -07 | -11 | 32 | -06 | 08 | 06 | -03 | 11 | 14 | 18 | -05 | 15 | 11 | 07 | -01 |
| C | 01 | 12 | 65 | 16 | -05 | -02 | -05 | -16 | 16 | 15 | 18 | -22 | -13 | 01 | -06 | -01 | 08 | -08 | 07 | -15 | -08 | 14 | -19 | -02 | -14 | -10 | -09 | 06 | 05 | -00 |
| D | 09 | -13 | -11 | -15 | -47 | 20 | -01 | -23 | 26 | -15 | 10 | -37 | 04 | 23 | -01 | 06 | 07 | -13 | 01 | -09 | 05 | 17 | -00 | -01 | -32 | -10 | -30 | -02 | 04 | 01 |
| E | -06 | 00 | -01 | 10 | 00 | 03 | 01 | -07 | -04 | -02 | -05 | -07 | -01 | -06 | -05 | 06 | -04 | 03 | 06 | -23 | -43 | -02 | 05 | 01 | -14 | -06 | 01 | 12 | 15 | 00 |
| F | -05 | -04 | 02 | 13 | 02 | 17 | 06 | -17 | 20 | 11 | 01 | -07 | 05 | 10 | -02 | 05 | 17 | -00 | -02 | -09 | -41 | -11 | 08 | -00 | -01 | 04 | 03 | 18 | 37 | -01 |
| G | 13 | -06 | -01 | 27 | 06 | 19 | 11 | -10 | -14 | 00 | -05 | -11 | -13 | -05 | -02 | 12 | 03 | 00 | -04 | -07 | -48 | 01 | 01 | 04 | -13 | 07 | 06 | -03 | 36 | -08 |
| H | 21 | 13 | -12 | 01 | 44 | 14 | -21 | 79 | -19 | -06 | 03 | 27 | -10 | 00 | -04 | -21 | 27 | 04 | -12 | -18 | 19 | 06 | 02 | 13 | 01 | 01 | 15 | -05 | -00 | 00 |
| I | -47 | -14 | -16 | -18 | 17 | -05 | 19 | -05 | -22 | -03 | -10 | -07 | 39 | 06 | -02 | -04 | -02 | 06 | 07 | 06 | -26 | -06 | 02 | 29 | -05 | 33 | 03 | 04 | 17 | 03 |
| J | -21 | -28 | -06 | 05 | -05 | -17 | -05 | -10 | 38 | 45 | -02 | 15 | 16 | -12 | -11 | 21 | 03 | -01 | 01 | 02 | -21 | -06 | -03 | -01 | 01 | -14 | 02 | -04 | 23 | 04 |
| K | 02 | -05 | 01 | -18 | 15 | 08 | 03 | -02 | 18 | -04 | -75 | -13 | -08 | -01 | 01 | -12 | 02 | -16 | -08 | 04 | -10 | 19 | -10 | 08 | -08 | -08 | -07 | -19 | 04 | -12 |
| L | 00 | 06 | -01 | 23 | -05 | 09 | 03 | -08 | -04 | 00 | -08 | -01 | -03 | -04 | -00 | 07 | -01 | -44 | -04 | -18 | -47 | -22 | -08 | -09 | -06 | -05 | -01 | 03 | 38 | 01 |
| M | 12 | 00 | 11 | -07 | -57 | -34 | 10 | -15 | 13 | 13 | -01 | -04 | 20 | 17 | 05 | -02 | 06 | 03 | -04 | -32 | -25 | 00 | -05 | -12 | -06 | 09 | -09 | -03 | 41 | 07 |
| N | 29 | -01 | -09 | -07 | -07 | -03 | -09 | 24 | -12 | 07 | -10 | 10 | -38 | -18 | -62 | -33 | -06 | 23 | 13 | 02 | 04 | -03 | 05 | -01 | 02 | 00 | 10 | -05 | -02 | 04 |
| O | -30 | 13 | 01 | 10 | -31 | -11 | 27 | -01 | 18 | 00 | 01 | 26 | 32 | -04 | -14 | 34 | 35 | -28 | 35 | -10 | -24 | -18 | -08 | -03 | 01 | 02 | 06 | -09 | 03 | 10 |
| P | -22 | -10 | -10 | 15 | -03 | 03 | 17 | -02 | -01 | 03 | -03 | -32 | -15 | -04 | -12 | 11 | -16 | 02 | 14 | -43 | -29 | -14 | 04 | 11 | -10 | 09 | -02 | -04 | 49 | -03 |
| Q | -06 | -11 | -01 | 05 | -05 | -26 | 05 | 03 | 00 | 05 | 10 | -30 | 13 | -15 | -12 | 26 | 09 | -04 | 12 | -09 | -05 | -75 | -11 | -07 | -07 | 07 | -08 | 03 | 04 | -04 |
| R | 07 | 13 | -07 | 17 | 31 | 19 | -00 | 02 | 01 | -05 | -08 | -10 | -14 | -16 | 06 | -07 | -04 | 02 | 04 | 00 | -04 | 20 | 74 | 12 | -07 | -05 | -04 | -09 | 12 | 11 |
| S | -14 | 05 | -09 | 12 | 08 | 08 | -16 | 09 | -20 | 05 | -13 | 13 | -05 | 39 | 01 | 09 | 06 | 15 | -05 | 04 | 11 | 10 | 25 | 85 | 05 | 03 | 20 | 13 | 12 | 12 |
| T | -01 | -10 | 03 | 22 | 10 | -01 | 00 | 05 | -00 | -00 | -03 | -19 | 06 | -01 | -05 | 11 | -14 | 02 | 05 | 01 | -23 | -04 | -02 | -03 | -74 | -22 | 08 | 04 | 23 | -01 |
| U | -18 | -08 | -19 | -10 | 27 | 16 | -09 | -14 | -09 | -13 | -12 | -06 | -05 | -02 | 04 | 15 | 28 | 05 | -01 | 08 | 02 | 04 | 05 | 07 | 09 | 71 | -01 | 06 | -00 | -02 |
| V | 14 | -04 | 14 | -00 | -11 | -20 | -05 | -13 | 00 | 09 | -06 | 03 | 17 | -25 | -03 | -10 | 34 | 07 | 23 | -04 | 20 | -13 | -14 | -04 | -19 | 08 | -26 | 04 | -13 | 07 |
| W | -14 | -01 | -14 | -01 | 02 | -14 | -02 | -16 | 21 | -31 | -09 | -03 | -01 | -07 | 08 | 01 | 27 | 11 | -02 | -18 | -37 | -26 | 15 | 01 | 24 | -05 | 07 | 33 | 28 | 08 |
| X | 20 | -16 | -07 | 07 | 15 | 13 | -02 | -08 | -02 | 00 | -09 | 07 | -07 | 14 | -01 | 02 | -04 | 10 | 53 | -14 | -31 | -11 | 08 | -02 | -02 | 12 | 07 | 01 | 34 | 05 |
| Y | -16 | -20 | 15 | -03 | -11 | -03 | 10 | -22 | 08 | -09 | 03 | -02 | 19 | -02 | -03 | 17 | -04 | -16 | -04 | -07 | -64 | -10 | 10 | -23 | 04 | 06 | -52 | 09 | 01 | -06 |
| Z | 08 | -20 | 29 | 06 | -02 | 09 | -17 | 06 | 05 | -03 | -07 | -10 | 24 | -28 | -13 | 09 | 07 | -11 | 05 | -09 | 19 | 05 | 10 | -20 | 16 | 27 | 43 | 11 | -24 | -02 |
| AA | -33 | -23 | 08 | -10 | -12 | -09 | 04 | -01 | 11 | -27 | -03 | -17 | -04 | 04 | 04 | 06 | -18 | 04 | 07 | -10 | -04 | -10 | -03 | 11 | -05 | 14 | -20 | 76 | -03 | 00 |
| BB | 10 | -00 | -03 | -02 | -02 | -11 | 00 | 05 | 09 | -03 | 07 | 06 | 03 | 11 | -08 | 08 | 09 | -14 | 11 | 10 | 08 | 05 | 08 | 12 | 05 | -03 | -04 | -02 | -06 | 94 |

Note: decimals have been omitted.

Table XXVI
Coefficients of Congruency Between Factors
for Urban General
Practitioner Sample and Rural General Practitioner Sample

| Rural General Practitioner Sample Factors | Urban General Practitioner Sample Factors |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | BB |
| A | -54 | 10 | -11 | 08 | 10 | 11 | -16 | -03 | 21 | -22 | -18 | 27 | 25 | 05 | -05 | 01 | -22 | 07 | 07 | -04 | 18 | -07 | -12 | -13 | -05 | -17 | 08 | -09 |
| B | 06 | 30 | 29 | -13 | 16 | -13 | 13 | 07 | -23 | -02 | 19 | 02 | 20 | -04 | -09 | -23 | 09 | 07 | 06 | -09 | 20 | 16 | -25 | 10 | -01 | 12 | -12 | 03 |
| C | 01 | -23 | 03 | 07 | -03 | 07 | -01 | -08 | -17 | 17 | -25 | -18 | -21 | -15 | 12 | -05 | -28 | -07 | 10 | 00 | 11 | -10 | -04 | 02 | 03 | -08 | 14 | 02 |
| D | -04 | -17 | -09 | 25 | 26 | 04 | 15 | -11 | 20 | 20 | -17 | -01 | 03 | -04 | 45 | 07 | -04 | -12 | 11 | -05 | 04 | -15 | 09 | 12 | 07 | -25 | 03 | 00 |
| E | -11 | 02 | 07 | 00 | 06 | 10 | 03 | -03 | -22 | -04 | 10 | -05 | -10 | -06 | -16 | 12 | -04 | 03 | 08 | -08 | 15 | -23 | -03 | 05 | -04 | 02 | -31 | 01 |
| F | -09 | -04 | -06 | 14 | 13 | -15 | 17 | -07 | 07 | 03 | -16 | 10 | 01 | 02 | 00 | 00 | -25 | 17 | -01 | -16 | 03 | -06 | 11 | -13 | -16 | 03 | 02 | -01 |
| G | 11 | 10 | -18 | -09 | 06 | 05 | 13 | 16 | -14 | -02 | -07 | -07 | -03 | 13 | -11 | 08 | 02 | 07 | 17 | 02 | 11 | -18 | -08 | 37 | 05 | 17 | 00 | -12 |
| H | 18 | 38 | -13 | -12 | -05 | -21 | -45 | 00 | -10 | -03 | 19 | -03 | 16 | -07 | -13 | 04 | 10 | 36 | 07 | 14 | -22 | 02 | -08 | -11 | -02 | 25 | -19 | -01 |
| I | -33 | -03 | 04 | -04 | -11 | 10 | -03 | 24 | -08 | -14 | 02 | -01 | 20 | 11 | -17 | -02 | 17 | -01 | -14 | 00 | -09 | 05 | 04 | 05 | -06 | -05 | 11 | -06 |
| J | -04 | -20 | -08 | 01 | 02 | 08 | 13 | 02 | 41 | -03 | 04 | -15 | -06 | -18 | -04 | 06 | -09 | 05 | -01 | 00 | 08 | -07 | 10 | -21 | -02 | -03 | 07 | 02 |
| K | -02 | 00 | 16 | -07 | 01 | 06 | 03 | -08 | 03 | -52 | -13 | -15 | -01 | -04 | 07 | 09 | 01 | 15 | 15 | -01 | -15 | -02 | -09 | 01 | 21 | -06 | 04 | -11 |
| L | -02 | 04 | 01 | -08 | -03 | -04 | -02 | -08 | -03 | 00 | -02 | -01 | -08 | -03 | -07 | 60 | -10 | 05 | -17 | 05 | 27 | -11 | 21 | 02 | 04 | 15 | 03 | 00 |
| M | 12 | -27 | 17 | 22 | -21 | -07 | 10 | -12 | 08 | 03 | -06 | -12 | -04 | 08 | 29 | 02 | -25 | -32 | -14 | 06 | 03 | 08 | 09 | 11 | 00 | -07 | 14 | 08 |
| N | 26 | 18 | -02 | -01 | -08 | -07 | -09 | 04 | -02 | -06 | 18 | -12 | -03 | -15 | 08 | -23 | 01 | -09 | 14 | 08 | -15 | -10 | 05 | 14 | 04 | 13 | -16 | -01 |
| O | -13 | -17 | -03 | 18 | -01 | 22 | 13 | -13 | 14 | 03 | 05 | 10 | -10 | 02 | -16 | 19 | 01 | -20 | -32 | 05 | 12 | 04 | 37 | -10 | 09 | 11 | 07 | 02 |
| P | -24 | -05 | -12 | -06 | 07 | 06 | 00 | -07 | -08 | 00 | -20 | -05 | 09 | -04 | 02 | 15 | -12 | 03 | -20 | 03 | 06 | -15 | 17 | 01 | 08 | -05 | 26 | -03 |
| Q | 06 | 16 | -03 | 17 | -23 | 00 | -07 | -15 | 10 | 15 | -07 | 19 | -02 | -18 | -14 | 02 | 04 | -10 | -33 | 00 | 13 | -15 | 44 | -02 | -02 | -05 | 08 | 02 |
| R | -07 | 09 | -10 | -20 | 11 | -05 | 05 | 02 | 01 | -15 | 07 | -01 | 17 | 12 | 04 | 03 | -03 | 21 | 29 | -48 | -17 | 09 | -27 | -01 | 09 | 01 | -07 | 12 |
| S | -09 | 02 | -18 | 11 | 07 | -11 | -22 | 10 | -14 | -17 | 15 | 16 | 27 | 09 | -05 | 04 | 01 | 02 | 08 | -23 | -38 | 25 | -03 | -03 | -12 | 01 | 15 | 06 |
| T | -07 | 01 | -15 | -18 | 07 | 09 | -15 | 01 | -02 | 06 | -15 | 12 | -12 | -05 | -02 | -05 | 03 | 07 | 21 | -04 | 12 | -45 | 09 | 23 | 02 | 13 | 09 | -01 |
| U | -09 | -01 | 00 | -15 | -05 | -04 | 06 | 03 | 03 | -25 | -07 | 04 | 11 | -01 | -20 | -05 | 27 | 15 | -24 | -18 | -04 | 12 | -20 | 04 | -05 | -03 | -02 | -09 |
| V | 13 | -02 | 03 | 19 | -25 | -09 | 07 | -09 | -01 | -07 | 03 | 09 | -21 | -31 | 00 | -14 | -02 | -09 | -01 | 06 | -06 | -13 | 02 | 11 | 00 | -17 | -09 | 00 |
| W | -08 | -06 | 10 | 19 | -12 | 10 | 12 | -31 | 01 | -05 | 07 | -08 | -04 | 11 | -03 | -07 | 14 | 06 | -23 | -14 | -13 | 09 | 15 | -02 | -29 | 05 | 06 | 13 |
| X | 29 | -14 | -01 | -17 | 08 | 00 | -02 | -07 | -02 | -09 | 25 | 20 | 01 | -27 | 05 | -13 | -07 | 24 | -01 | -10 | -13 | -12 | 08 | -14 | -01 | 13 | -14 | 01 |
| Y | -10 | -18 | 16 | 01 | 00 | 40 | 12 | -14 | 05 | 02 | -16 | -02 | -07 | 08 | -07 | -03 | 05 | -08 | -15 | -14 | 16 | -10 | 10 | -11 | -09 | -37 | 02 | -07 |
| Z | 25 | 02 | 04 | 06 | 14 | -09 | 00 | -04 | -03 | -16 | -31 | 04 | -10 | -11 | -02 | 07 | 04 | 02 | -23 | -07 | 03 | -05 | -03 | 01 | -13 | 30 | -06 | -02 |
| AA | -18 | -05 | -05 | -02 | 03 | 09 | -05 | -19 | -12 | -02 | -11 | -12 | -02 | -16 | 10 | -04 | 12 | -09 | -18 | -10 | 04 | -03 | 11 | 03 | -63 | -21 | 04 | -01 |
| BB | 15 | -05 | -09 | 09 | -01 | -08 | 00 | -17 | 03 | 05 | 03 | 09 | -01 | -08 | 00 | 08 | 05 | 00 | 10 | -07 | -02 | 14 | 09 | -07 | 04 | -05 | 04 | 71 |

Note: decimals have been omitted.

# Chapter V

## Discussion

As stated and inferred repeatedly throughout this report, the central problem of the present investigation has been to attempt to develop on-the-job measures of physician performance. That this represents a pioneering and highly exploratory venture is attested by the handful of investigations that have been conducted in this area. Obviously, then, the findings reported herein can best be regarded as a first crude map of most of the domain of physician performance. Stated alternately, an initial step has been taken and with its findings and the application of scientific intuition and ingenuity we can proceed beyond the exploratory stage to more direct and concise forms of research wherein fundamental and fruitful concepts can be formulated and tested. Towards this end, it is of value to consider and emphasize the major methodological problems this project encountered in our year-and-a half of work from which tangible progress has been made as a guide to future researchers in the domain of physician performance.

The results presented in this report are based, by and large, initially on correlational analysis and finally on the method of factor analysis. The choice of this latter statistical tool was deliberate:

> "Factor analysis has its principal usefulness at the borderline of science..... Factor analysis is useful, especially in those domains where basic and fruitful concepts are essentially lacking and where crucial experiements have been difficult to conceive" (Thurstone, 1947, p. 56).

Moreover, as there are numerous variations in factor analysis methodology, the investigators had to choose from among them a particular factoring method to use in this project. In view of the vast quantity of data collected, it was considered to our advantage, especially at this early stage of exploration, to utilize a procedure that would process and analyze as much data as possible. Thus, on the basis of available computational facilities, including factorial programs, the generally preferred principal components solution based on eigenvalue and eigenvector analysis (Harmon, 1960, pp. 154-191) was used in each phase of the project. Unity was placed in the diagonal cells of the correlation matrix and factors having an eigenvalue greater than 1.00 were extracted. These factors were then rotated to a final solution using the varimax analytic orthogonal solution.

As is to be expected, some problems may be inherent in this type of factor analysis computer program. For example, the use of unity in the diagonal cells of the correlation matrix might be questioned by some factor analysis experts. Literally dozens of methods for estimating communalities have been proposed (e.g., Guttman, 1953; 1956; 1957; Roff, 1936; Tyron, 1957; Wherry, 1949; Wrigley, 1957; 1961) By and large, each author has tended to advocate his method over the existing techniques for approximating communalities. In the authors' opinion, however, for large correlation matrices such as we have used factorial results are not seriously affected by the method of estimation for the diagonal cells, since in our case only one value out of the 80 in a column is so estimated. In support of this view, Harmon (1960, p. 86), after reviewing the literature, writes:

> "As a saving grace, there is much evidence in the literature that for all but very small sects of variables, the resulting factorial solutions are little effected by the use of 'communalities' or unities in the principal diagonal of the correlation matrix."

Another problem is that some theorists and experimentors may question the use of extracting factors having an eigenvalue greater than 1.00. This raises a moot point for which there is no obvious answer. An examination of Tables II, VIII, XIII, XVII, and XXI, consistently show that after approximately twenty factors have been extracted the comulative proportion of the variance accounted for in the remaining factors in our factor analyses is very small (in most cases less than 5%), thus inferring that some factors resembling specific factors (factors largely due to a single or a few variables) are extracted by this method. Harmon (1960, pp. 185-191), on the other hand, has compared such things as hand computations versus computer computations and also different computer programs and has found a very high degree of consistency in his results. Mathematically and computationally there is no argument about the soundness of the principal components method of factoring. Others argue that in view of the time saved through the use of computers, the mass of data that can be analyzed, and the comparability of results with other procedures, there is no question but that eigenvalue and eigenvector solutions are valuable statistical tools (e.g., Golub, 1955; Sawanobori, 1957; Tucker, 1944; White, 1958). In any event, the authors tend to agree with Thurstone (1947, p. 509) when he says:

> "No matter what method of factoring is used, it is a safe rule to continue the factoring until one is sure that the factoring has gone far enough. Too many factors can do no harm, but too few factors are sure to cause trouble in identifying the structure."

A third problem was that the computer program used in the analyses did not allow for missing scores. Moreover, in any on-the-job criterion data collection of the magnitude of this project, some missing scores are inevitable prior to the data analysis. Thus, in each factor analysis the mean score, or 50, was substituted for all missing scores. The effect of such a substitution was to cause a reduction of the overlap between variables. This effect, coupled with the use of unity in the diagonal cells of the correlation matrix, probably produced some slight bias towards lower factor loadings and unique factors. However, since the number of substituted scores was small, the authors feel that the results were not materially affected by substituting the mean for missing data.

Still others, who examine the measures employed and the resultant factor patterns, may claim that some experimental dependence is inherent in the factors obtained. For expample, a number of variables employed in each phase of the project are related to years of professional experience and age, such as number of publications, and number of papers presented at professional society neetings. Thus, it could be argued that such criterion variables are not genuine criterion variables until the effects of years of experience and age are eliminated or "partialed out." If this were done, the number of specific factors might be reduced, resulting in a smaller number of factors which would have greater significance and generality.

In responding to this view, the authors agree that this approach represents a sound experimental design. At this early stage of research, however, it is felt that it is not a critical aspect of the data analysis. First, in an initial investigation of this type we are interested in exploring the possibility of effects from such experimental dependence. For instance, it may seem obvious that the number of publications is positively related to years of professional experience--that with age and experience one is bound to produce more publications. But an inspection of the raw data shows most physicians, young or old, produce very few publications. Also, some younger physicians have been more prolific in publications than most of their older colleagues. Thus, the obvious "ain't necessarily so." It is to the advantage of researchers to test these assumed relationships before partialling them out on an a priori basis. Secondly, by and large, the results of our factor analyses have not been materially altered by including experimental dependence. In Factor A of the Full-Time College of Medicine Faculty study, a factor connected with years of professional experience emerged as an independent factor. In each phase of the project, an interviewer rating factor emerged demonstrating that the ratings are highly intercorrelated. In each phase of the project, number of offices held in scientific and professional societies come out on the same factor as the variable measuring the number of professional society memberships. In summary, then, even though experimental bias was present it did not result in meaningless factors and by including such "biasing" elements we were able to examine their relations and lack of relations rather than making a priori assumptions of their nature and relationships to other criterion variables.

As indicated in the foregoing, the problems discussed in terms of methodology were felt to be appropriate but not critical with respect to the outcome of the results obtained. Unfortunately, the same rationalization cannot be applied when considering the reliability of the data obtained. Specifically, as presented in this report we do not have a comprehensive objective index or measure of the consistency of the scores obtained in our samples. Most of the data were obtained in a single interview with each participating physician. Many of the interview questions required the physician to estimate the frequency of occurence of various professional activities: e.g., the number of consultations and referrals, the number of patients with psychosomatic problems, and the number of hours worked per week. Other items obviously reflected the competence of the physician and may have encouraged distortion, either in the direction of exaggeration or modesty, in their responses, e.g., questions pertaining to the use of laboratory techniques, the amount of technical equipment purchased, and a self-rating of success. A few questions were of a rather personal nature and may have tended to cause the physicians to elicit distorted responses in unpredictable directions: e.g., social and avocational activities, and income. Obviously, then, what is needed is at least a partial replication of the data collection process as a check on the reliability of their responses. As such, a few physicians in each of the samples should be contacted and interviewed again, their responses scored, and a statistical comparison be made of their original responses with the responses obtained in the replication session (a check on their responses by even more direct means, such as a direct inventory of their office equipment, would be more difficult and, of course, was not attempted). However, in view of the busy schedule of medical doctors it was felt that repeated contacts with them by this project would eventually reduce their willingness to donate their time to the study. Moreover, as indicated below the present project will be extended into another year-and-a-half project in which potential predictors of the criteria developed in this project will be investigated. During the second project, the physicians studied in this report will be contacted again. It is planned that some evidence concerning reliability of their responses will be obtained at that time.

At an inferential level, however, some evidence about the reliability of the data was available. To begin with, each physician who participated in the project was rated by his respective interviewer on a 5-point scale ranging from "below average" to "outstanding" on the overall reliability of the physician's responses. The mean rating across all interviewers on all physicians was 2.72, indicating a fair degree of reliability of the physicians' responses, as judged from the interviewers' point of view. Next, six questions asked in the interview were repeated in another reasonably comparable form in other sections of the interview. For example, the physicians were asked to estimate both how many professional journals they read "in detail" each month and the percentage of their total working time spent in studying and reading in their field or specialty. Computed correlation coefficients between the raw scores of each of these six pairs of related questions were computed for each sample of physicians studied, resulting in coefficients ranging from .55 to .84, with a mean correlation of .67. Finally, in each phase of the project an under-estimate (lower bounds) of the reliability of the criterion measures employed is given by the common-factor varience (communality obtained) (Harmon, 1960, pp. 13-16). As shown in Tables IV, IX, XIV, XVIII, and XX, the communalities for the variables tend to range from the mid-sixties to the mid-nineties, averaging around .70. Overall, then, in view of the subjective nature of many of these variables, the manner in which they were obtained, and their unexplored nature these conservative reliability estimates are considered quite satisfactory until a few more direct and more objective indices are obtained in the second project.

A consideration equally important to that of reliability is the question about the representiveness of our samples---to what extent can we say the physicians studied in this project are representative of a larger population of physicians, such as all of those in Utah, or even the nation? As with reliability, clear-cut conclusive, "yes" or "no" types of answers are not forthcomming. For example, in our comparisons of doctors that participated in the project with those that did not on the criterion variables that were obtained for both participants and non-participants from Utah, we generally found no significant differences between them. However, these comparisions were based on only the few criterion variables in each phase of the study that were available for non-participants. From this evidence, if we consider the population to which we wish to generalize to be physicians in the state of Utah, we have a quite representative sample. Specifically, in most investigations the sample studied is only a small segment of the population from which it was drawn; but in our studies 54% of the physicians in the state were studied. Within the limitations of time and funds, we have made no attempts to see to what degree our results are applicable at a national level. As any local Chamber of Commerce will boast, Utah is a most unique state, so that solely on the basis of the data collected for this project, we do not know and cannot ascertain to what extent the geographical, sociological, and cultural elements that typify Utah contribute to its producing specific types of practicing or teaching physicians. As a saving grace, however, sound experimental design suggests that, by and large, sources of error or extraneous variance can be reduced, and representiveness thereby increased, by increasing one's sample size. In this respect, we have accomplished a great deal--more physicians have been studied on more variables than any previous study to date. In addition, the emphasis in this project has not been on the measurement of the typical level of performance or individual differences in performance. Instead, we have tried to study the relations between different types of performances and accomplishments of physicians. As judged from factor analyses on other groups, it is, therefore, quite possible that the general findings (such as the great complexity of the criterion area, absence of overlap betweem academic grades and physician performance measures, etc.), as well as many specific examples of the prosence or absence of relations, will hold up for other populations of physicians in our nation.

Related to the topic of sample representativeness, is that of the representativeness of our criterion measures. In other words, to what extent have we measured (or at least representatively sampled)all pertinent aspects of physician performance? Admittedly, several obvious areas were ommitted in our studies. In our investigation of the College of Medicine full-time faculty we obtained many measures but we did not do intensive, long range studies of the teaching and research accomplishments of its faculty members. Without longitudinal studies and greater studies-in-depth one cannot hope to fully assess the lasting impact of such persons upon their students and future medical science. With both the Urban Specialist sample and the two General Practitioner samples no attempt was made to obtain either patient or hospital staff evaluations of the physicians studied and no effort was made to study directly the quality of medical care provided by individual physicians through such techniques as the Medical Audit (Mortrud, 1953). Since such measures are quite important, and since there is little reason to suppose that they overlap to any great extent the measures used in the present study, an attempt should be made to include them in follow-up studies of the criterion problem for medical specialists and general practitioners. The greater the degree to which these additional measures do not overlap, the greater would be the complexity of the total area of physician performance, which we have already found to be highly complex.

Before terminating this discussion of research problems encountered in the project, special consideration should be given to the Urban Specialist sample. Although the group of medical doctors studied in this particular sample were homogeneous in the sense that all were certified in one of the medical specialties, they were also very hetrogeneous in terms of their each being certified in a variety of areas of medical practice. Thus, we did not have a sample of only certified surgeons, but a sample comprised of a mixture of certified surgeons, pediatricians, radiologists, internists, etc. As such, an inherent problem existed in terms of the adequacy of the data collected. As indicated in Chapter III, the same questions were asked of all participating specialists. However, since the specialist's professional activities are to a large extent determined by his type of practice, we found that some questions were not applicable across medical specialties. To take a few examples, internists tend to see more patients per day than surgeons, radiologists spend more money on equipment than pediatricians, and obstetricians have more hospitalized patients than dermatologists. Moreover, since most of the questions asked were intended to sample "typical" medical activities, we found the questions used did not adequately cover a few specialties, such as, psychiatry, opthalmology, dermatology, anesthesiology, radiology, and pathology. An obvious alternative would have been to develop special questions for each medical specialty. Unfortunately, this would have resulted in a series of studies based on very small samples from which little could be said in terms of generality of results. Thus, taking everything into consideration, particularly time and expense, the authors decided that despite these limitations it might be best at this early exploratory stage of investigation to ask the same questions of all specialists, lump the data into one composite sample, and analyze the material as if the specialists comprised a more homogeneous population. Nevertheless, meaningful factors were extracted by this procedure and the general findings of complexity and of grades not overlapping job performance emerged here as they did on the other samples. We still emphasize, however, that future studies should attempt to develop criterion measures that are appropriate to each specialty as well as across medical specialties.

In the authors' view, the major contribution of the present project is that highly trained professional groups, such as physicians, are not only amenable to psychological investigation but that meaningful criterion data can be collected from them. Prior to the initiation of the present project, requests were made of numerous agencies for financial assistance to support the investigation reported in this manuscript. The general concensus of opinion was to the effect that although such a study was timely and of potential value it was not feasible because they doubted that we could both overcome methodological problems and also get the cooperation of physicians needed to collect the necessary data to develop adequate criterion measures of physician performance. That this view was essentially erroneous is evidenced by the mass of data we have collected in a straight forward manner and without complications. All in all, it is felt the problems and limitations mentioned above are far outweighed by this overall finding, not to mention the "little extras" mentioned below.

Taking this investigation as a whole, perhaps the second most important finding was the great complexity of the total criterion area for each of the samples studied. There was surprisingly little overlap between the world of student performance in education and the work-a-day world of performance as a physician, teacher, researcher, consultant, etc. Also, there was complexity across the on-the-job measures since there generally was not a large amount of overlap among the different measures of physician performance. An indication of this complexity is given by the fact that one factor was obtained for approximately every three measures of performance included in the analyses. In terms of practical application, this means that one should not attempt to measure physician performance by one, or even a few criterion scores, such as number of publications, number of patients, or gross income, since then the total criterion of performance may appear much less complex than it really is. Instead, it means that there are many outlets through which a doctor can expend his energies and efforts in his professional career. Thus, and individual physician can focus his efforts into a larger or smaller number of these outlets, but it is unlikely that he can devote an above average amount of energy to all of the available channels of professional achievment. As a result, in assessing the overall accomplishments and contributions of an individual it is not approprate to categorize him as a good or bad physician, but to determine in which outlets he has expressed himself and how effectively he has achieved in each of them. Admittedly, this is not simplifying evaluation; however, it is coming closer to emperically approximating both the professioanl and laymen (Funkenstein, 1962; Johnson, 1962) observation that physician performance is a complex phenomenon not to be explained by a single unitary concept or measure.

Even though it has been demonstrated that physician performance is an inherently complex phenomenon, it is not conceptually unmanageable. Through factor analysis we have been able to organize our mass of data into a few separate categories (factors) for each group studied so that they can be verbalized and quantitatively manipulated. Moreover, by looking across the results obtained from each phase of the project we can see even more organization and simplicity. An inspection of Table XXVII shows: (a) 5 roughly similar factors were found in all of the groups studied, (b) 8 similar factors were found in 4 of the 5 groups studied, (c) 13 similar factors were found in 3 of the 5 groups studied, and (d) 6 similar factors were found in 2 of the 5 groups studied. Thus, only 30 of the 140 factors discovered in these studies are so unique that they apply to only one of the groups studied. Conversely, 76% of the factors found are common to at least two of the groups and approximately 40% of the factors are common to at least 4 of the 5 samples investigated.

In most investigations, experimenters do not hesitate to point out areas that they have explored for the first time. In this project we feel we are quite fortunate in this regard. To the authors' knowledge, no study has ever attempted to develop criterion measures of performance for a College of Medicine faculty. Considering the crucial role of the medical educator and researcher in the medical profession, it is surprising that work has not been done prior to this time on the dimensions and correlatea of the performancec accomplishments, and contributions of professional medical educators. We also suspect that no. study anywhere near this magnitude has ever been done on any other college faculty outside of medicine. Although others have sutdied general practitioners as a group, though less extensively than studied here (Peterson, et. al., 1956), the present study represents the first time that general practitioners have been separated into urban and rural samples and investigated accordingly. In view of the resultant factor analyses, in which factors specific to either urban or rural general practitioners were found, it appears that this approach is warranted in future investigations. Finally, and most important, the present project is certainly the first investigation in which all of the major divisions of medical practice have been studied in a single, integrated

## Table XXVII

## Table of Common Factors

| Title | Factors Per Sample | | | | |
|---|---|---|---|---|---|
| | FF* | US | URGP | UGP | RGP* |
| Achievement in Edcuation | Y | BB, CC | DD | BB | BB |
| Level of Medical Specialization | K | G | A | A | A |
| Participation in Professional Socities | S | T | V | W | Q |
| Civic Participation | T | U | X | U | S |
| Keeping Abreast by Means of Journal Reading | C | P | R | P | L |
| Off-the-Job Socializing | V | | W | T | R |
| Interviewer's Rating of Likeability | W | X | AA | Z | |
| Diagnostic Thoroughness | | B | J | Q | J |
| Attainment in Publications | | M | O | N | N |
| Self-Evaluated Overall Professional Success | | O | Q | D | O |
| Keeping Abreast by Means of Uncommon Techniques | | S | U | F | Y |
| Unorthodox Success Image | | Z | BB | Y | AA |
| Late Attainment of M.D. Degree | | AA | CC | AA | E |
| Professional Recognition for Achievements | B | A | P | | |
| Medical Charity Work | | E | D | C | |
| Quantity of Hospital Responsibilities | | H | L | K | |
| Self-Evaluated Contributions to Society | | N | N | M | |
| Medical Consulting | | K | B | | B |
| Keeping Abreast by Means of Refresher Courses | | Q | S | | X |
| Leisure Planning | | V | Z | | U |
| Willingness to Provide Special Attention to Patients | | D | | H | W |
| Keeping Abreast by Means of Drug Deatil Men | | R | | B | P |
| Size of Medical Practice | | | E | R | M |
| Group or Clinic Practice | | | H | G | H |
| Hospital Staff Recognition | | | K | J | K |
| Professional Stability | | | Y | V | T |
| Psychosomatic Orientation | | C | | | G |
| Established Medical Practice | | | F | E | |
| Self-Evaluated Contribtuion to Medicine | | | M | L | |
| Satisfaction from Interpersonal Relations | | | C | | C |
| Amount of Malpractice Insurance Carried | | | G | | F |
| Availability to Patients | | | | O | D |
| Overall Occupational Satisfaction | U | | | | Z |
| Early Academic Progress and Recognition | D | | | | |
| Contributions as an Editor | E | | | | |

Table XXVII

(continued)

| Title | Factors Per Sample | | | | |
|---|---|---|---|---|---|
| | FF | US | URGP | UGP | RGP |
| Self-Evaluated Accomplishment in Research | F | | | | |
| Self-Estimated Comprehensiveness of Further Publications | G | | | | |
| Research Consulting | H | | | | |
| Rejection of Actual Practice | I | | | | |
| Prolonged Residency Training--Excellence as a Clinician | J | | | | |
| Clinical Teaching and Consulting | L | | | | |
| Academic Orientation--Teaching Excellence | M | | | | |
| Teaching Responsibilities | N | | | | |
| Administrative Contributions to College of Medicine | O | | | | |
| Rate of Professional Mobility and Advancement | P | | | | |
| Status-Seeking Tendencies and Skills | Q | | | | |
| Public Recognition for Contributions | R | | | | |
| Academic Seniority | A | | | | |
| Project Cooperativeness | X | | | | |
| Prolonged Residency Training | | F | | | |
| Quality of Hospital Responsibilities | | I | | | |
| Medical Supervisory Responsibilities | | J | | | |
| Attainment in Research | | L | | | |
| Need for Long Vacations--Financial Success | | W | | | |
| Orthodox Success Image | | Y | | | |
| Emphasis on Medical Equipment | | | I | | |
| Keeping Abreast by Means of Professional Society Courses | | | T | | |
| Scientific Orientation Towards Medical Diagnosis | | | | I | |
| Professional Society Memberships--Leisure Planning | | | | S | |
| Professional Mobility | | | | X | |
| Country Practitioner | | | | | I |
| Socio-Economic Level of Patients | | | | | V |

*FF represents College of Medicine study, US represents study of Urban Specialists, URGP represents the combined Urban and Rural General Practitioner study, UGP represents the Urban General Practitioner study, and RGP represents the Rural General Practitioner study.

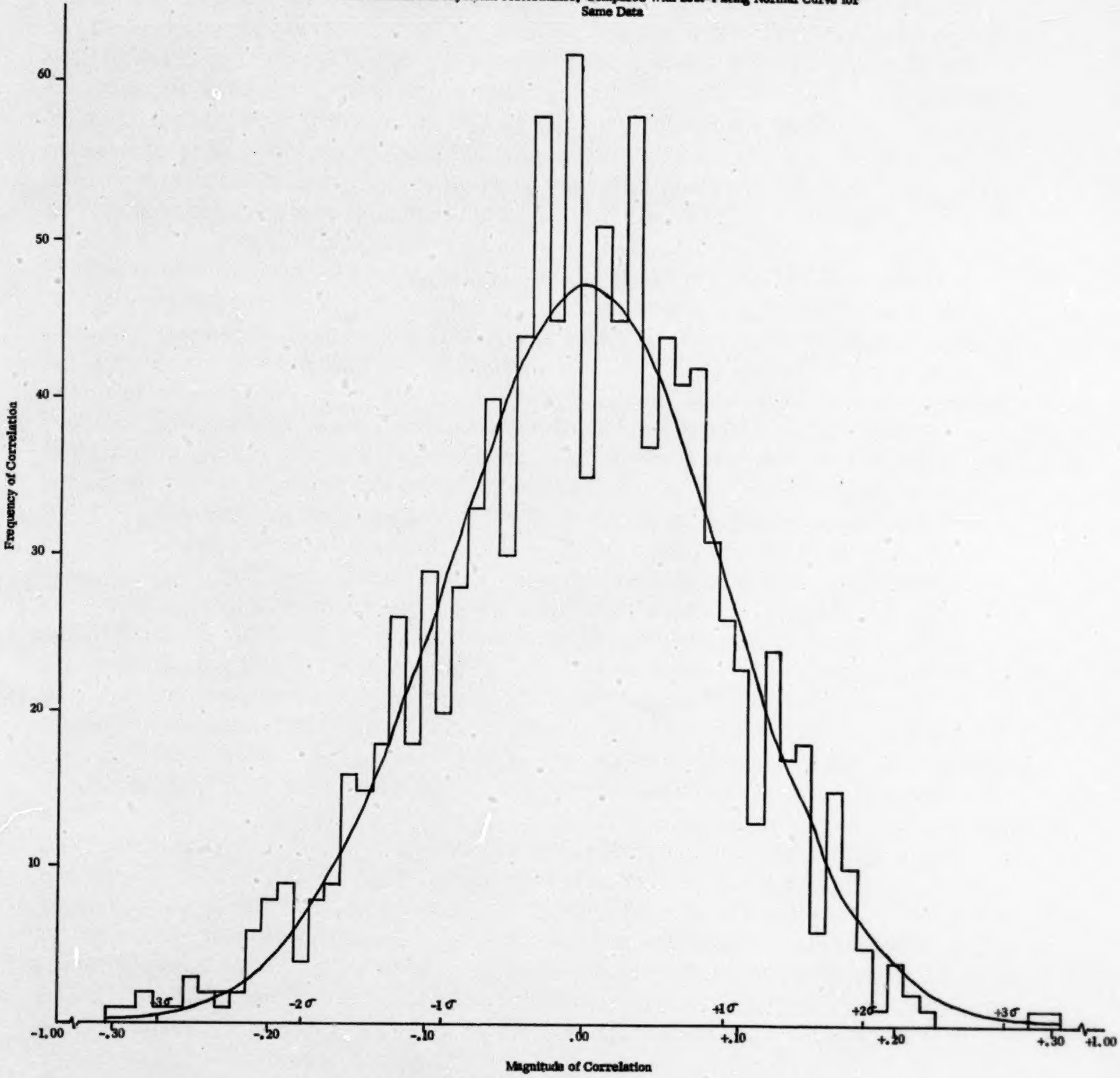
project. As such, practically the whole gamut of medicine has been explored (i.e., the teacher, the researcher, the medical specialist, and the general practitioner) with similar techniques and methodology. Thus, even though this paradigm has been exploratory, it provides a basis or orientation from which future research can build in a systematic manner.

A final contribtuion of this project is one that has been reiterated throughout this report. Specifically the results obtained clearly demonstrate that performance in a formal academic setting, as measured by grade-point-average, is almost completely independent of all measured performances as a practicing physician. With the full-time faculty group, the medical specialists group, and the three general practitioner groups all measures of academic performance came out together on the same factor (a non-job performance factor) which, in turn, was independent of all of the other factors that were related to physician performance. Alternately, when we look at each of the 80 criterion measures of physician performance we found our academic measures appeared in only one of the 25 to 30 factors that we obtained in each group of physicians we studied, whereas our other measures of performance appeared in approximately four of the factors that were obtained in each group. From yet another view, when we look at the 1082 intercorrelations across the measures of academic performance and the measures of on-the-job performance we find even more striking evidence of a general lack of relationship between academic achievement and physician performance. For example, 97% of the intercorrelations between undergraduate and medical school grades and the numerous measures of on-the-job performance were of a zero-order magnitude (between -.20 and +.20). This means that only 3% of these intercorrelations were of sufficient magnitude to indicate a significant relationship between academic grades and performance as a practicing physician and more of these significant correlations were negative than were positive.

Moreover, in view of the large number of intercorrelations involved, one would almost expect 3% of them to show a significant relationship merely by chance. To test this possibility we plotted a frequency distribtuion of the correlation coefficients that we obtained across our measures of academic achievement and our measures of physician performance (see Table XXVIII). As such, we could then see how many times our measures of academic performance correlated with the on-the-job performance measures at various magnitudes between -1.00 and +1.00. For example, Table XXVIII shows that academic grades correlated -.20 (or higher negatively) eight times and _.20 (or higher positively) four times with our measures of physician performance. Moreover, a visual inspection of the Table XXVIII indicates that the frequency distribution of these intercorrelations tends to resemble the so-called "normal" or more appropiatley called "random error" distribution. Since a true normal distribution is a distribution of values that one would expect by the operation of chance (or random error) and since a visual inspection of our obtained frequency distribution appears to be shaped like a normal distribution, we superimposed a true normal curve on our frequency distribution and statistically determined how colse the frequency distribution approximated the normal curve. In so doing, we found the obtained frequency distribution was slightly, (but not significantly), "flat-topped" (platykurtic) as

**Table XXVIII**

**Frequency Distribution of Intercorrelations Between Measures of Academic Performance And Measures of Physician Performance, Compared With Best-Fitting Normal Curve for Same Data**



compared to the normal curve, and significantly skewed (as if pulled or distorted away from symmetry) toward the negative or left end of the frequency distribution but with a mean not different from zero. Thus, this means that our measures of academic performance essentially show only a random error (chance) relationship to our measures of on-the-job performance but that there is a very slight tendency for academic grades to correlate *negatively* with the on-the-job performances of practicing physicians. All in all, then, these results make it extremely difficult to justify the use of premedical academic performance in medical school as a criterion for selecting students to be accepted into medical school and thereby into the medical profession and medical practice.[13]

In concluding this chapter, mention should be made of our future plans with regard to this project. The findings reported only represent the first phase of a two-phased ongoing research project. The ultimate goal of both phases of the research project is to develop evaluative procedures (tests and other measures) for the selection of medical school applicants. However, before developing such selection techniques it is necessary to have pertinent criteria of performance of practicing physicians, researchers, and medical educators. Unfortunately, as indicated in Chapter I this area--criteria of successful performance as a physician --has not previously been adequately explored. Thus, the presently reported research was designed to fulfill this need. In the second phase, an attempt will be made to develop techniques for selecting applicants for admission to medical schools which can, with reasonable accuracy predict the criteria of physician performance we have developed and reported in this paper. In so doing, it is felt that we should not rely on the usual academic predictors, such as premedical grades and typical aptitude tests, because, as our results have shown, performance in education is not related to performance as a practicing physician or medical educator or researcher. On the other hand, Taylor and his associates (Ellison & Taylor, 1962; Taylor, *et. al.*, 1959; 1961) have found biographical inventories can be used successfully in the prediction of multiple independent criterion designed to assess the creativity and productivity of scientists. Recent research (Schumacker, 1961; Shoemaker & Rohver, 1948) indicates that biographical inventories and self-ratings can be used successfully in the area of medicine. Accordingly, in the second phase of this ongoing research a sizeable battery of biographical and self-rating scores will be developed to predict the many dimensions of physician performance we have found in this first or criterion phase. If successful, medical schools would have, for the first time, selection techniques for their applicants based on performance as a practicing physician rather than performance as a student in highly artificial academic settings.

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[13] We do not make this point without being aware of an argument that some might quickly raise in objection to it; namely, that the lack of correlation shown between academic performance in medical school with performance measures of physicians later on the job is due to "restriction of range." A technical discussion of our reaction to this view, explaining why we feel it is relatively unimportant, is presented at the end of this chapter.

## Technical Note on Zero Correlations Found

## Between Academic Grades and Job Performance

In view of both our results on the complexity of physician performance and our finding of essentially zero correlations between academic grades and physician performance, we feel that a lengthy note dealing with these findings as viewed from different perspectives is warranted as an appendix to this chapter of the report. Most of the 11 points in this appendix focus on some aspect of the general total question of the relation between academic grades and physician performance, whereas the last three points deal primarily with the question of restriction of range and with how the technical correction formulas for restriction of range work in a sample multi-dimensional case.

If only three or four dimensions of physician performance had been found, the failure of grades to predict performance could have been handled in terms of such ready explanations as restriction of range (high selection of talent) in the samples studied. However, since at least 24 non-academic performance dimensions were uncovered in each of the five groups of physicians studied, our overall impression is that any attempts to make statistical corrections of our findings will, at best, change the total multi-dimensional picture of performance as we have reported it, in only minor, instead of major ways.*

In other words, we can consider our finding of essentially zero-order correlations between academic grades and physician performance from either of two extremes: at one extreme is the possibility that academic grades are related to each of the 25 or so dimensions of physician performance. In this first case, if corrections are made to remove bias from our sampling, the correlations of academic grades with each of these dimensions would not be expected to rise very much above their essentially zero-order magnitudes found in our study. At the other extreme is the most optimistic possibility that academic grades are strongly related to only a very few of the dimensions of physician performance. In this latter case, correcting for a selected biased sample could increase considerably the correlation of academic grades with each of these few dimensions but the correlations with the many, many remaining dimensions would then, of necessity, not rise above their zero-order level. In any event, we believe that the burden of proof rests on those currently defending academic grades as relevant variables for predicting physician performance. They must provide evidence on how many and which ones of the performance dimensions will be noticeably related to grades in an unrestricted, full-range-of-talent sample. A series of different viewpoints or perspectives are outlined below which explain in detail our rationale for holding the general views described above.

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*One should recognize that there is a slim chance that any changes would be negligible.

### 1. Medical School grades are Inadequate as Guidance or Predictive Tools for Later Physician Performance:

According to the evidence in this study the presently available grades are generally of little or no use in identifying among the graduating M. D. 's those who will be more successful in any of the 25 or more obtained dimensions of physician performance. Of importance here is the observation that *regardless of any possible degree of restriction of range of talent,* present academic grades on graduating medical students simply do not predict how well a medical student will perform in medical practice. Even if medical students represent a highly selected sample from the general population, the fact remains that on the basis of the available grade-point-averages, we cannot determine or predict on-the-job performnace. Since we are vitally concerned with predicting how well students will perform in actual practice, it seems obvious that we should initiate investigations using other types of predictors that will isolate those who will later be superior-level, on-the-job performers from the possibly highly selected sample of medical students. In so doing, we are not claiming current grades are worthless, but merely that they are not adequate or sensitive enough to resolve the problem of predicting on-the-job performance.

### 2. Medical School Grades are Inadequate as Substitute Criteria for On-The-Job Performance of Physicians:

At an empirical level, the results of our studies clearly support the above common sense view. Our findings (*without any attempts at corrections*) consistently and clearly demonstrate that performance in a formal academic setting, as measured by grade-point-averages, is almost completely independent of all measured performances as a practicing physician. Such results make it extremely difficult to justify the use of academic measures as an indirect measure of later performance as a physician. No correlations between academic grades and physician performance were anywhere near the level expected in parallel test forms, which would be needed if grades were to be used as close approximations of performance on later, more ultimate on-the-job criteria. Specifically, Table XXVIII shows that the *highest* single correlation obtained between academic grades and our performance measures was only +.30. *Even with extremely generous corrections for restriction of range of talent* we further believe that it is highly unlikely that more than one or two physician performance factors could be approximated by academic grades. In other words, the limitations of reality would prevent statistical correlations to be adequate to yield anything approaching the high degree of correlations needed for grades to serve as truly substitute criteria for each and every one of the later separate criteria of on-the-job physician performance. (This finding, of course, raises serious questions about all studies that have been done to date using grades as substitute criteria for later, more ultimate criteria that were then unavailable.)

### 3. It is unlikely that Characteristics Needed in Physician Performance Factors were the Main Basis of Student Selection through Pre-medical and Medical Education:

One argument that could emerge is that students have been sequentially eliminated along the academic ladder on the basis of all the characteristics needed in physician performance. This assumes that students are required to display and are evaluated on all of the different characteristics that are needed by practicing physicians and that these characteristics, much more than academic characteristics not related to job performance, are the basis on which students are selected for promotion along the entire academic ladder.

Even if one argues that this is true for some of the performance dimensions we have obtained, the burden of proof is on him to indicate which of the 25 or more physician factors are the ones on which students along the academic system are pre-selected and to give evidence of this pre-selection is the testing and grading system. We feel that this will be difficult to demonstrate very convincingly. In our results, it is also noteworthy that in the samples studied there is considerable variability remaining in premedical and medical grades and there is also considerable variability in most of the physician performance factors that were identified.

On this point we believe that performances in school-like situations do not often closely resemble psychologically the performances in the world-of-work situations. The 25 or more different sets of psychological characteristics needed in the multiple criteria of physician performance seem to be full of complexities and in many situations contain performances for which there are a few, if any, counterparts in the usual academic programs. For instance, where in the lecture room is the medical student required to demonstrate his ability to persuade patients to follow a prescribed course of medical treatment; where does he show the ability to put an upset client at ease; where does he display an inclination to be thorough and methodological in his collection of information about a case? To us, it seems fairly obvious that the traditional medical school curriculum with its lecture-room emphasis, its paper-and-pencil tests, and its reliance upon textbook material tends to tap only a narrow band of the broad spectrum of human skills and abilities which are used by the physician in the successful practice of his occupation.

Other research results, such as those from our studies of summer research participation programs of high school students (Taylor, Cooley, & Nielsen, 1963), indicate that different characteristics are required to succeed in academic (school-like) courses where old knowledge is learned than are needed in research participation programs where new knowledge is produced.

### 4. It is Unlikely that a High Correlation Will Be Found Between Randomly Picked Pairs of Psychological Performances:

To claim that academic performance is really an effective predictor of most or all of the 25 or more dimensions we have isolated, is to assume that the ability to perform well in an academic setting reflects a "global" or all-pervasive ability or trait that distributes itself throughout the total range of the performances of practicing physicians. This is felt to be largely unrealistic. Its fallacy lies in its over-simplified concept of performance abilities. On the contrary, in studying any large domain of human performance, such as physician performance, Guttman (1958) claims that investigators should entertain the belief that human performance consists of many specific abilities. He has shown mathematically that the most likely situation multi-variate investigations must expect is that there are many independent performance dimensions or factors (at least $\underline{n}$-3 under special conditions and generally $\underline{n}$-1, where $\underline{n}$ is the number of variables). In other words, Guttman says that if a factor analytic investigator argues that there are fewer than $\underline{n}$-1 factors that will account for the intercorrelations between his variables, he should have adequate reasons or evidence for doing so.

Similarly, in each of the five samples of physicians that we have studied, 24 to 29 independent, non-academic performance dimensions or factors were found. All our other research tends to indicate that the human being is very, very complex and that there are a large variety of relatively independent human performances in the total world-of-work. To the degree to which this evidence is correct, most correlations between two human performances will tend to be quite low or of a zero-order. Thus, if a wide variety of performances are being correlated in fairly representative samples of the total, grown-up population, then higher correlations are clearly the exception rather than the rule. Moreover, when one finds a large number of zero correlations most of them will remain zero or near zero rather than becoming sizable correlations in an unselected sample of individuals.

### 5. There Is Little Evidence of True Homogeneity in the Samples Studied:

If a sample studied were truly homogeneous in any single characteristic, there would be no noticeable variability in that characteristic and no factor could be found pertaining to it. Consequently, if one argues for true homogeneity in one or more characteristics, then he is arguing for a reduction in the number of factors that would be found in the groups studied. A paralled argument, that the 100% variance in grades (or any criterion with which we are dealing) does not represent the full variance possible in the particular measures, is essentially the same argument: namely, that another factor could be measured with the device displaying no variance due to homogeneity of the sample on that factor. Again, this leads to the same claim that one or more factors were washed out of consideration due to the highly selected sample studied.

In none of the five physician samples studied does this type of argument seem very plausible since at least 25 dimensions of physician performance were found in each case. These results do not suggest the loss of many, if any, on-the-job factors through homogeneity of samples, especially when compared to a sample of Air Force scientists some of us studied (Taylor, et al., 1961) for whom only 14 dimensions of on-the-job performance were uncovered. If anything, this argument would apply only to the strictly academic factors since only one such factor was found in each sample studied and performance strictly within the academic sphere is probably more complex than that.

### 6. It Is Unlikely that Medical College Graduates Are Highly Selected on Each of 25 Independent Characteristics:

In each of the five physician samples studied we found 25 or more independent dimensions of physician performance. If it is assumed that each of these dimensions calls for one overall characteristic and that each of these 25 characteristics are as independent as these physician performances are, then the probability is very low (essentially zero) that these students are highly selected on each and every one of these 25 independent characteristics. For example, if one should argue that only the top half of the population has survived on each of the 25 characteristics, then the proportion that would have survived to go through medical school successfully would be equal to the product of 25 fractions of one-half. This proves to be $(1/2)^{25}$ which quite obviously is practically zero. To select students in such a manner that their performances on 25 independent dimensions is restricted would in effect mean that practically no student would be accepted to medical school. Even if one takes a more lenient picture by saying that the top 3/4 have survived on each characteristic, then $(3/4)^{25}$ power still equals approximately zero. If only 1/10 were eliminated on each of 25 characteristics then the proportion of those who would survive this 25-hurdle sequence would then be expressed by $(9/10)^{25}$ power which again yields an almost negligible proportion. In other words, this argument that high selection has occurred on a large number of independent dimensions is not sound since practically no one (a negligible proportion) would have survived the elimination processes to get into and through medical school. Therefore, those using this argument must either reduce greatly the number of independent dimensions on which they claim the students have been highly selected or else claim a very weak selection system (such as a very low cut off) on each of the large number of independent characteristics.

### 7. There Are Limitations on Sizes of Validities of a Single Predictor Across Each of 25 Independent Criteria:

While it is possible that a predictor test could be constructed so that it is practically a parallel form to one given external criteria, it becomes less and less possible for any single test to correlate very highly with each one of an increasing number of criteria, especially if these criteria are truly independent of each other. Assuming perfect reliability of both the criterion and the predictor test in the case of one criterion, the total variance of the predictor test could theoretically overlap that criterion. Thus, the maximum correlation obtainable is the square root of the overlapping variance ( $\sqrt{1.00} = 1.00$). In the case of two criteria, half (.50) of the total variance could overlap each criterion, so the maximum correlation that could be obtained with each of these for the most centrally located predictor would be $\sqrt{.50}$ or .71. The argument continues for the most centrally located predictor with the total variance split into equal parts in each case so that the maximum correlation would be $\sqrt{.33}$ for each of 3 criteria, $\sqrt{.25}$ for 4 criteria, $\sqrt{.20}$ for 5 criteria, $\sqrt{.16}$ for 6 criteria, and so on. In our case of 25 criteria, the most centrally located predictor among them would overlap 4% of the variance of each so that the correlation obtained with each of the 25 criteria will be $\sqrt{.04}$ or .20. Thus, if one argues for a general (most centrally located) predictor he cannot hope for high validity for this predictor with each and every one of 25 independent criteria. The only way he could get high validity is to have validities that are zero or near zero with most of the criteria so that the predictor could be highly correlated with one or more of the very few remaining correlations. This approach is based upon the fact that a test has only 100% of its variance available to overlap these multiple criteria which do not overlap among themselves but shoot out into different dimensions. And there is little evidence to indicate which few of the25 or more factors would be the ones correlating high with medical grades in a group of persons with a full range of talents. To find the grade-getting cluster of criterion factors one would have to specify which of our criterion measures are sequentially and explicitly restricted by the ladder-like process of academic achievement, promotion, and selection. For example, can our educators say that what they select their students on is related to how many patients the student will see per hour when he gets into medical practice? Obviously, they cannot easily say so.

### 8. It Is Unlikely that a Very High Correlation Would Be Found Between Grades and Any One Single Combination of the 25 or More Criterion Factors:

This is the only point presented here that deals primarily with a synthesis rather than an analysis of the total problem. In such a large 25 dimensional space representing physician performance, it is not very likely that a vector for grades and a properly weighted composite vector of all the criterion dimensions would be very closely clustered to each other. The exact synthesis of the composite of all of the criterion dimensions would be a real problem, since each physician has in effect selected the criteria most important to him through the areas in which he most devotes himself. Moreover, there are wide differences across physicians on the set of performance criteria that each one emphasizes. Thus, even if medical grade-point-averages did correlate highly to one physician's proposed composite of these performance criteria, the same grades could be almost unrelated to the best criterion composite proposed by some other doctors. We have not yet had the time to seriously tackle this total problem of combining these separate criterion factors to form a best composite, as determined by individual doctors and by groups of doctors.

It would of course be possible to reverse the traditional thinking in a multiple correlational procedure and hold up a particular grade-point-average as the criterion to see how highly it would correlate with a best weighted combination of the large number of criterion factors. Inspection of the low and mostly zero validity coefficients presently available for such a treatment would lead one to expect a not very high multiple correlation (especially if shrinkage formulas were used), unless some surprisingly high individual correlation coefficients were obtained through application of restriction of range formulas.

### 9. Correction for Restriction of Range in our Data May Yield More High Negative Correlations than High Positive Ones, a Troublesome Finding, Indeed, for School Grades:

Throughout this discussion, we have not even considered the effects of the negative correlations between the academic performance measures and our on-the-job criterion measures. In other words, if we assume restriction of range was suddenly removed the negative correlations would become more negative, rather than moving towards the positive end of the correlation continuum. In view of the fact that our analysis of the frequency distribution of Table XXVIII showed the distribution was slightly skewed in the negative direction, the effect of removal of restriction of range for these negative correlations would be to show that if any prediction is possible with such grades, it is to the effect that when grade-point-averages are used to predict on-the-job performances they tend to isolate those who will perform poorly rather than those who will perform well.

### 10. Large but Indirect Restriction of Range on any One Physician Performance Factor is Unlikely:

From still another view, if one argues that the physicians studied are indirectly, rather than directly, selected or restricted in range in one criterion dimension of physician performance through its relation to one single selection variable, then he must recognize the following limitations. In the case of indirect restriction of range on a criterion as a result of direct restriction of range on a predictor or selection device, the correlation between the direct selector and the indirectly selected criterion in the unrestricted population would have to be at least .87 for the standard deviation of the criterion to be reduced to one-half its original size. This logic occurs from the variability present in only one single array of a correlation chart which is expressed by the standard error of estimate, namely (Gulliksen, 1961, p. 132),

$$\sigma_{\text{(estimated criterion)}} = \sigma_{\text{(criterion)}} \sqrt{1 - r^2_{\text{(criterion) (test)}}}.$$

From this formula it is seen that a validity coefficient of .87 when squared in this formula will yield a shrinkage of the initial criterion standard deviation to one-half for only the one small array of the total correlation matrix. Thus it is unrealistic in nearly all cases to expect this high of validity and thus to expect the standard deviation of the criterion to be reduced to anywhere near one-half of its original size through restriction of range on one or more selection devices. And certainly this argument of a powerful indirect criterion restriction of range could not be used very strongly across each and every one of the 25 criterion dimensions.

### 11. Correction Formulas for Direct Restriction of Range on Grades Are Not Highly Corrective for Near-Zero Correlations, Especially in the Case of Multiple Independent Criteria:

Through the foregoing series of arguments we feel that we have opened widely the problems concerned with our finding an essentially random error distribution of zero correlations between grade-point-averages and measures of physician performances. We have left until last the detailed discussion of the complex formula corrections for different cases of restriction of range. In general, we do not feel that these corrections for restriction of range will change the picture much from that which we described as being the most accurate picture at the beginning of this technical note. Moreover we suspect that most of the discussions up to now of the effects of restriction of range on findings such as those we have presented in this report have considered only superficially the technical facets of this problem.** We therefore would like to familiarize the reader with the technical background necessary for evaluating the effects of restriction of range.

Sampling Bias and Restriction of Range of a Directly Selected Variable: it is seldom that applied psychologists study groups of people who have been selected at random from the general population. Usually the groups available to them for study are military inductees, occupational groups, or select samples of students. These groups are selected on various criteria, some of which are explicit, but most often implicit. For example, inductees into the Army are not a random sample from the population. They must pass minimum standards of physicial health and have certain minimum scores on the Army General Classification Test in order to be accepted into the Army. This is an example of direct or explicit selection. Although medical students are explicitly selected from applicants to medical schools upon the basis of their pre-medical school academic performance and performance on such tests as the Medical College Aptitude Test, they probably are also indirectly selected ahead of time on many other implicit variables over which medical educators have little direct control: the students' motivation to become doctors, their ability to finance their medical education, the absence of family obligations that would prevent their entering medical school, and so on. In what manner does such explicit (direct) and implicit (indirect) selection of samples distort the appearance of "true" correlations among variables measured using these selected samples of subjects?

To understand this let us use an example: suppose a group of students is selected according to their having certain minimum scores on an achievement test. If we now wanted to use this group of students to study the correlation between the achievement test scores and intelligence test (I. Q.) scores we would have to consider the effects of the bias in our sample. In this regard we could say that for our group of students the bottom end of the distribution of achievement test scores had been considerably curtailed. This leaves the range of achievement test scores in our select sample less than it is in the general population, and this implies that the standard deviation of achievement test scores in our group of

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**We also realize that these provocative results stir up other explanations: e.g., that "knowledge is unquestionably a prerequisite" and that trends within the group studied will not necessarily display or be in agreement with cross-group trends (continued) students would be smaller than it is in the general population.

Statisticians assume that any given score, X, contains both a true score part, $X_t$, and an error score part, $X_e$, which is expressed mathematically as (Gulliksen, 1961, p. 5):

$$X = X_t + X_e. \qquad (01)$$

We assume in this case that the error score, $X_e$, is a random error that varies in any sample of scores around the value of zero, sometimes being positive and other times being negative. When we correlate scores, the correlation between them is due to their true scores, while the error parts of their scores, being randomly varied, do not correlate with one another. But when we restrict the range of some variable we tend to minimize the variability of true scores. But the variability in the error components of the scores remains the same since it is random and not under our control. Hence, proportionally there is more error in a restricted range of scores than an unrestricted range. And the effect of this upon the computation of correlation coefficients is to reduce the correlations between variables restricted in range.

Returning now to our problem of finding the best estimate of the correlation between the achievement test scores and I. Q. scores, suppose that we find that in our group the standard deviation of the achievement test scores is 3.0, while in the national population the standard deviation of the achievement test scores is 10.0. This indicates that there is considerable restriction of range in our sample. Suppose we then use the data obtained from our sample and compute the correlation coefficient between the test scores and the I. Q. scores and find that it is .20. What would we expect the correlation between the test scores and I. Q. to be in the national population?

For the answer to this we can turn to Gulliksen (1961, p. 133) who offers a formula that will enable us to find this. We present this formula here in slightly rearranged form:

$$R_{xy} = \frac{r_{xy}}{\sqrt{r_{xy}^2(1 - Z^2) + Z^2}}, \qquad (02)$$

where $R_{xy}$ = the unrestricted correlation between the explicitly selected variable, x (achievement test scores), and an incidentally selected variable, y (I. Q.),

$r_{xy}$ = the restricted correlation between the explicitly selected variable and another, incidentally selected variable in a curtailed sample,

$$Z^2 = \frac{s_x^2}{S_x^2},$$

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(continued) (a special case of restriction of range in which the trends are different across groups than within the group studied). While we welcome such potential explanations, we doubt that any one of them by itself will be applicable for more than a very few of the many dimensions of physician performance.

$s_x$ = standard deviation of explicitly selected variable in the restricted sample,

$S_x$ = the standard deviation of the explicitly selected variable in the general population.

Substituting the values in our problem into this equation we find that we could infer that the unbiased correlation between achievement test scores and I. Q. in the general population would be .56.

The reader is now referred to Table XXIX which is based upon formula (02), showing values of $R_{xy}$, the corrected, best estimated correlation between the explicitly selected variable, x, and an incidentally selected variable, y, in the general population, given knowledge of the correlation between these variables in the restricted sample and the ratio of the standard deviation of the explicitly selected variable measured in the restricted sample to the standard deviation of this variable in an unrestricted population. To use this table the reader selects the row corresponding to the value of $r_{xy}$, the restricted correlation, indicated in the left margin. He then goes to the right across the table until he comes to the column corresponding to the ratio of the restricted standard deviation to the unrestricted standard deviation. The value at the intersection of this row and column is the corrected estimated correlation between these variables in the unbiased population.

Table XXIX

Change in Correlation as a Function of Change in Variance of the Incidental Selection Variable

| $r_{xy}$ | $s_x/S_x$ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | .01 | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 |
| .90 | .999 | .998 | .995 | .989 | .981 | .971 | .960 | .947 | .932 | .916 |
| .80 | .999 | .997 | .988 | .975 | .957 | .936 | .911 | .885 | .857 | .828 |
| .70 | .999 | .994 | .979 | .956 | .925 | .890 | .852 | .813 | .774 | .736 |
| .60 | .999 | .991 | .966 | .928 | .882 | .832 | .780 | .731 | .683 | .640 |
| .50 | .999 | .985 | .944 | .887 | .821 | .755 | .693 | .636 | .585 | .539 |
| .40 | .999 | .974 | .909 | .824 | .737 | .657 | .588 | .529 | .478 | .436 |
| .30 | .999 | .952 | .843 | .723 | .618 | .532 | .464 | .409 | .365 | .329 |
| .20 | .998 | .898 | .714 | .562 | .454 | .377 | .322 | .279 | .247 | .221 |
| .10 | .995 | .708 | .449 | .317 | .243 | .197 | .165 | .142 | .124 | .110 |
| .01 | .707 | .099 | .049 | .033 | .024 | .019 | .016 | .014 | .012 | .011 |

Table XXIX showing values of the unbiased correlation, $R_{xy}$, between an explicitly selected variable, x, and an incidentally selected variable, y, given $r_{xy}$, the correlation between x and y, in the biased, restricted sample, an

$s_x/S_x$, the ratio of the standard deviation of the explicitly selected variable in the restricted sample to its standard deviation in the unbiased population.

Correcting the Estimated Correlation from Knowledge of the Restriction of Range of An Incidentally Selected Variable: when a sample of subjects is selected using an explicit variable as a basis for restricting the range of the sample, other variables, which are correlated with the variable used for explicit selection, are thereby incidentally selected for the group. For example, in the group of students selected according to their achievement test scores, we might expect, given a correlation between these achievement test scores and I. Q. scores, that our sample will also be somewhat restricted in range in I. Q. scores due to incidental selection occurring along with the explicit selection of the sample.

The relationship between the restriction of range of an incidentally selected variable and the value of the unbiased correlation between an explicitly selected variable and an incidentally selected variable sometimes is useful. Suppose, for example, that in our previous example we found that the national norms of the achievement test were based upon a biased group of students which we suspect were somewhat restricted in range upon the explicitly selected variable. We know in addition to this that the norms for the I. Q. test was based upon a more randomly selected sample. Knowing in our restricted sample that the sample's standard deviation on I. Q. scores was 8.0, while in the general population it is 10.0, what could we estimate the correlation between the achievement test scores and I. Q. to be?

A formula frequently used to find this is as follows (Gulliksen, 1961, p. 142):

$$\frac{s_y}{S_y} = \frac{\sqrt{1 - R_{xy}^2}}{\sqrt{1 - r_{xy}^2}}, \qquad (03)$$

where

$s_y$ = the standard deviation of the incidentally selected variable, y, (e.g., I. Q. in our problem) in the restricted sample,

$S_y$ = the standard deviation of the incidentally selected variable, y, in the general population,

$r_{xy}$ = the correlation between the incidentally selected variable, y, and the explicitly selected variable, x, (e.g., grade-point-average in our problem), in the restricted sample,

$R_{xy}$ = the correlation between the incidentally selected variable, y, and the explicitly selected variable, x, in the general population.

Knowing the values of $s_y$ (8.0), $S_y$ (10.0), and $r_{xy}$ (.20) for our sample, we can substitute these values into the above equation and solve for $R_{xy}$. Doing so, we find that $R_{xy} = .62$. Thus, although we find the correlation between achievement test scores and I. Q. in the sample of students is .87, we could infer that it would be .62

in the general population.

The reader can now turn to Table XXX which gives the values of $R_{xy}$, the corrected estimate of the unrestricted correlation between the explicitly selected variable and the incidentally selected variable when the ratio of the standard deviation of the incidentally selected variable in the restricted sample to its standard deviation in the unbiased population is known, and the biased estimate of the correlation, $r_{xy}$, between these variables is known for the restricted sample.

Table XXX

Values of the Corrected Unbiased Estimate of the Correlation between an Explicitly Selected Variable And an Incidentally Selected Variable when the Ratio Of the Standard Deviation of the Incidentally Selected Variable and Its Standard Deviation in the Unbiased Population and the Biased Estimate of the Correlation Is Known

| $r_{xv}$ | $s_y/S_y$ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | .01 | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 |
| .90 | .999 | .999 | .996 | .991 | .984 | .975 | .965 | .952 | .937 | .919 |
| .80 | .999 | .998 | .992 | .983 | .970 | .953 | .932 | .907 | .877 | .841 |
| .70 | .999 | .997 | .989 | .976 | .958 | .934 | .903 | .866 | .820 | .766 |
| .60 | .999 | .996 | .987 | .970 | .947 | .916 | .877 | .828 | .768 | .693 |
| .50 | .999 | .996 | .984 | .965 | .938 | .901 | .854 | .795 | .721 | .626 |
| .40 | .999 | .995 | .983 | .961 | .930 | .888 | .835 | .767 | .680 | .565 |
| .30 | .999 | .995 | .981 | .958 | .924 | .878 | .820 | .744 | .646 | .512 |
| .20 | .999 | .995 | .980 | .955 | .920 | .871 | .808 | .727 | .620 | .471 |
| .10 | .999 | .995 | .980 | .954 | .917 | .867 | .802 | .717 | .605 | .445 |
| .01 | .999 | .994 | .979 | .953 | .916 | .866 | .800 | .714 | .600 | .435 |

Table XXX shows the values of $R_{xy}$, the corrected unbiased estimate of the correlation between an explicitly selected variable, x, and an incidentally selected variable, y, when the ratio of the standard deviation of the incidentally selected variable and its standard deviation in the unbiased population and the biased estimate of the correlation, $r_{xy}$, is known.

One might suppose that by merely extending the range from which scores are drawn he could continue to boost the size of correlations ever higher. But this is not possible. Peters and Van Voorhis (1940, p. 117) point out that the variability of the whole y distribution (the incidentally selected variable) cannot become less than that of a single column of the correlation chart (assuming homoscedasticity, i.e., that the standard deviations of columns in the correlation chart do not differ from one another), for the y distribution must be made up of scores summed across the columns. The standard deviation of a column is given by the formula:

$$s_c = s_y \sqrt{1 - r_{xy}^2} \text{ ,} \qquad (04)$$

where $s_c$ is the standard deviation of the column, $s_y$ is the standard deviation of y in the sample, and $r_{xy}$ is the correlation between x and y in the sample.

However, if we take formula (03) and rearrange its terms, we will get:

$$s_y \sqrt{1 - r_{xy}^2} = S_y \sqrt{1 - R_{xy}^2} \text{ .} \qquad (05)$$

Substituting $s_c$ into this equation we get:

$$s_c = S_y \sqrt{1 - R_{xy}^2} \text{ .} \qquad (06)$$

This formula implies that there is a limit to which we can restrict the range of an incidentally selected variable by selecting a sample on some explicit variable, and this limit is governed by the value of $R_{xy}$ in the general population.

For example, suppose the correlation between I. Q. and annual income in the general population is .60. Even if we selected a narrow sample of people on the basis that they all made between $9,500 and $10,000 a year, we would find that we could not restrict the range of I. Q. among them to produce a standard deviation for the sample less than 8/10 of what it is in the general population. We arrive at this figure this way:

$$s_y = s_c = S_y \sqrt{1 - .60^2} = S_y \sqrt{.64} = S_y (.8).$$

Now, a restriction of the variability of a sample that produces a standard deviation of only .8 of the standard deviation of the general population is not very severe.

What this means is that for the many low and moderate correlations which exist between variables in the general population, we should not expect that explicitly selecting samples severely on one variable will greatly distort the apparent pattern of correlations between most other variables. Only in the cases of those few variables that are highly correlated with the explicitly selected variable should we find severe distortion.

The Relationship of the Restriction of Range of an Explicitly Selected Variable to the Range of an Incidentally Selected Variable: it is interesting now to note the restriction of range of incidentally selected variables. In general, considerably restricting the range of an explicitly selected variable will have a considerable effect upon the range of an incidentally selected variable only if the correlation between them in the unrestricted population is .80 or greater. The formula to use to infer the degree of restriction of range of an incidentally selected varialbe when one knows the degree of restriction of range on an explicitly selected variable is given by Gulliksen (1961, p. 138) and it is presented here in slightly rearranged form:

$$s_y^2/S_y^2 = \sqrt{R_{xy}^2(s_x^2/S_x^2 - 1) + 1}\ , \qquad (07)$$

where

$s_y$ = standard deviation of the incidentally selected variable in the restricted sample,

$S_y$ = the standard deviation of the incidentally selected variable in the general, unrestricted population,

$R_{xy}$ = the correlation between the incidentally selected variable and the explicitly selected variable in the unrestricted population,

$s_x$ = the standard deviation of the explicitly selected variable in the restricted sample,

$S_x$ = the standard deviation of the explicitly selected variable in the unrestricted population.

This is shown graphically in Table XXXI. The table shows values of $s_y/S_y$ when the unrestricted correlation, $R_{xy}$, between x and y and the amount of restriction of range of x (the explicitly selected variable, expressed as the ratio of the standard deviation of x in the restricted sample to the standard deviation of x in the unrestricted population) is given.

Table XXXI

Values of $s_y/S_y$ when the Unrestricted Correlation Between x and y and the Amount of Restriction of Range of x is Given

| $s_x/S_x$ | $R_{xy}$ | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | .01 | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | .99 |
| .99 | .999 | .999 | .999 | .999 | .998 | .997 | .996 | .995 | .993 | .991 | .990 |
| .90 | .999 | .999 | .996 | .991 | .984 | .975 | .965 | .952 | .937 | .919 | .902 |
| .80 | .999 | .998 | .992 | .983 | .970 | .953 | .932 | .907 | .877 | .841 | .804 |
| .70 | .999 | .997 | .989 | .976 | .958 | .934 | .905 | .866 | .820 | .766 | .707 |
| .60 | .999 | .996 | .987 | .970 | .947 | .916 | .877 | .828 | .768 | .693 | .610 |
| .50 | .999 | .996 | .984 | .965 | .938 | .901 | .854 | .795 | .721 | .626 | .514 |
| .40 | .999 | .995 | .983 | .961 | .930 | .888 | .835 | .767 | .680 | .565 | .420 |
| .30 | .999 | .995 | .981 | .958 | .924 | .878 | .820 | .744 | .646 | .512 | .328 |
| .20 | .999 | .995 | .980 | .955 | .920 | .871 | .808 | .727 | .620 | .471 | .243 |
| .10 | .999 | .995 | .980 | .954 | .917 | .867 | .802 | .717 | .605 | .445 | .172 |
| .01 | .999 | .994 | .979 | .953 | .916 | .866 | .800 | .714 | .600 | .435 | .141 |

This formula is used as follows: suppose we know that the unbiased correlation between grade-point-average and I. Q. in the general population is .80. Assume also that we selected a group of students according to their having high grade-point-averages, and we found that the standard deviation of their grade-point-averages was 0.2, whereas in the general population we find the standard deviation of grade-point-averages is 1.0. We therefore know that the ratio of the standard deviation of grade-point-averages in our selected population to the standard deviation of grade-point-averages in the general population is .2/100 = 2. What could we infer is the ratio of the standard deviation of I. Q. in this select sample to the standard deviation for I. Q. in the general population? Using formula (07) or by consulting Table XXXI we would find that given 10 as the standard deviation of I. Q. in the general population we could expect the standard deviation for I. Q. in our select sample to be 6.20, or .62 that of the standard deviation in the general population. In general, this shows that a severe restriction of range of the explicitly selected variable does not place as severe a restriction of range on the incidentally selected variable, even when the unrestricted correlation between these variables is moderately high.

The Three Variable Case: let us now turn to a slightly more complex situation. Suppose we select a group of students to enter medical school according to their grade-point-average. We later test the selected students to find their I. Q. and we also obtain a measure of their performance as physicians. Suppose we then use the data of our select medical students to compute the correlations between grade-point-average, I. Q. and performance as a physician. We would have no problem infering the unrestricted correlations between grade-point-average and I. Q., and grade-point-average and performance as a physician using formulas previously discussed. But what could we infer is the unrestricted correlation between I. Q. and later performance as a physician?

Given the restriction of range of an explicitly selected variable, x, (e. g., grade-point-average), statisticians make three assumptions to solve this problem: (1) the regressions of incidentally selected variables, y, and z, on to the explicitly selected variable, X, will not be altered, (2) the variance of the incidentally selected variables about their regressions on the explicitly selected variable will not change, and (3) the correlation between y and z for a constant x is the same in both the restricted and unrestricted populations.

The first two assumptions are used in the case of two variables. The third assumption is new to us. Holding x constant can be accomplished by the use of partial correlation. Thus, the correlation between y and z in the unrestricted population is found by partialling out the correlation of x with each of these variables after first removing the restriction on its range. Gulliksen (1961, p. 149) has presented the formula which will accomplish this:

$$R_{yz} = \frac{\left[r_{yz} - r_{xy}r_{xz} + r_{xy}r_{xz}/(s_x^2/S_x^2)\right]}{\sqrt{\left[1 - r_{xy}^2 + r_{xy}^2/(s_x^2/S_x^{22})\right]\left[1 - r_{xz}^2 + r_{xz}^2/(s_x^2/S_x^2)\right]}}, \quad (08)$$

where lower case letters refer to values obtained for paratmeters in the restricted sample, and upper case letters refer to values of parameters in the unrestricted population, the symbols being defined as in the previous formulas.

For example, suppose we found that the correlation between I. Q. and grade-point-average in our select group of medical students was .60, while the correlation between later performance as a physician and grade-point-average was .20 for the select group. If the correlation between I. Q. and later performance as a physician was .10, what could we infer was the correlation between them in the general population? Before we could determine this, we would have to know the ratio of the standard deviation of the explicitly selected variable in the restricted sample ($s_x$) to the standard deviation of the explicitly selected variable in the unrestricted population ($S_x$). Suppose we found that this ratio was 2:10 or 0.20. Using the above formula we would find that the unrestricted correlation between I. Q. and later performance as a physician ($R_{xy}$) could be inferred to be .68. Of course, this is a rather large increase in the correlation, but then again restriction of range was rather severe.

*The Case of Multivariate Selection:* at this point let us consider the case where several explicit variables are used to select a sample. We find this is frequently the case where, for example, we find students in medical school being selected according to their having a minimum score on the Medical College Aptitude Test (MCAT) and a minimum grade-point-average. How does selecting samples using several variables at once effect the correlations of the explicitly selected variables with incidentally selected variables?

To solve this problem we will have to resort to equations using matrix algebra. But we will find that the same assumptions hold in the many variable selection case as in the three variable case just discussed: (1) the regressions of incidentally selected variables on the explicitly selected variables do not change under restriction of range, (2) the error made in estimating the incidental selection variables from the explicit selection variables is not changed by selection, and (3) the multiple correlation coefficients between the incidental selection variables are not altered by selection on a set of explicit variables.

We will define the following important matrices as follows:

$\underline{C}_{xx}$ = the correlations between the explicitly selected variables, with communalities down the diagonal for the unrestricted population,

$\underline{c}_{xx}$ = the correlations between the explicitly selected variables, with communalities down the diagonal, for the restricted population,

$\underline{C}_{yy}$ = the correlations among incidentally selected variables in the unrestricted population,

$\underset{\sim}{c}_{yy}$ = the correlations among the incidentally selected variables in the restricted population,

$\underset{\sim}{C}_{xy}$ = the correlations between the explicitly selected variables and the incidentally selected variables in the unrestricted population,

$\underset{\sim}{c}_{xy}$ = the correlations between the explicitly selected variables and the incidentally selected variables in the restricted population,

$\underset{\sim}{W}_{xy}$ = the matrix of beta weights for predicting incidental variables from explicitly selected variables in the unrestricted population,

$\underset{\sim}{w}_{xy}$ = the matrix of beta weights for predicting incidental variables from explicitly selected variables in the restricted sample.

It is assumed that (Gulliksen, 1961, p. 162):

$$\underset{\sim}{W}_{xy} = \underset{\sim}{w}_{xy}, \tag{09}$$

which is accounted for by the first assumption stated above; the regressions of the incidental variables upon the explicitly selected variables are the same in the unrestricted and restricted samples.

The value of $\underset{\sim}{w}_{xy}$ can be found for the restricted sample using the following formula (Gulliksen, 1961, p. 163):

$$\underset{\sim}{w}_{xy} = \underset{\sim}{c}_{xx}^{-1} \underset{\sim}{c}_{xy} \tag{10}$$

where $\underset{\sim}{c}_{xx}^{-1}$ is the matrix inverse of the matrix, $\underset{\sim}{c}_{xx}$, of correlations between the explicitly selected variables found in the restricted sample. In other words, formula (10) computes the multiple correlation beta coefficeints for the explicit variables regressed on to the incidentally selected variables from data obtained for the restricted sample. The corresponding formula for the unrestricted sample is as follows (Gulliksen, 1961, p. 164):

$$\underset{\sim}{W}_{xy} = \underset{\sim}{C}_{xx}^{-1} \underset{\sim}{C}_{xy}, \tag{11}$$

where $\underset{\sim}{C}_{xx}^{-1}$ would be the inverse of the correlations between the explicitly selected variables in an unrestricted population, and the other terms as definod above.

Now if we make the assumption that the beta weights for both the restricted and unrestricted populations are the same, then (Gulliksen, 1961, p. 164)

$$\underset{\sim}{W}_{xy} = \underset{\sim}{C}_{xx}^{-1} \underset{\sim}{C}_{xy} = \underset{\sim}{c}_{xx}^{-1} \underset{\sim}{c}_{xy} = \underset{\sim}{w}_{xy}. \tag{12}$$

If we take the two inner terms of these equations and multiply them by the matrix $\underset{\sim}{C}_{xx}$ (the correlation matrix showing correlations between explicitly selected variables in the unrestricted population) we will get the following formula (Gulliksen, 1961, p. 165):

$$\underline{C}_{xy} = \underline{C}_{xx}\underline{c}_{xx}^{-1}\underline{c}_{xy} , \tag{13}$$

which is equivalent to

$$\underline{C}_{xy} = \underline{C}_{xx}\underline{w}_{xy} . \tag{14}$$

This would be the formula to use to find the unrestricted correlations between the explicitly selected variables and the incidentally selected variables, when both the unrestricted and the restricted correlations between the explicitly selected variables are known, and the correlations between the explicitly selected variables and the incidentally selected variables are known for the restricted sample.

For example, suppose we know that the correlation between the total MCAT score and grade-point-average in the general population is .80, we then find that it is .65 in our restricted sample of medical students described above.

We then want to know what the unrestricted correlations would be between these two variables and three other incidentally selected variables: diagnostic thoroughness, size of income, and number of medical school courses taught. The appropriate correlation matrices are shown below:

$$\underline{C}_{xx} = \begin{array}{cc|l} \text{MCAT} & \text{GPA} & \\ \hline .99 & .80 & \text{MCAT} \\ .80 & .99 & \text{GPA} \end{array} , \quad \underline{c}_{xx} = \begin{array}{cc|l} \text{MCAT} & \text{GPA} & \\ \hline .99 & .65 & \text{MCAT} \\ .65 & .99 & \text{GPA} \end{array} ,$$

$$\underline{c}_{xy} = \begin{array}{ccc|l} \text{D.T.} & \text{Inc.} & \text{Crs.} & \\ \hline .30 & .01 & .20 & \text{MCAT} \\ .01 & .15 & .30 & \text{GPA} \end{array} .$$

With these correlation matrices given to us, we would now like to find the matrix $\underline{C}_{xy}$, which would be the correlations between the explicitly selected variables (the MCAT and the GPA) and the three incidentally selected variables (diagnostic thoroughness, size of income, and number of medical school courses taught). We find first the inverse of $\underline{c}_{xx}$:

$$\underline{c}_{xx}^{-1} = \begin{bmatrix} 1.775 & -1.076 \\ -1.076 & 1.775 \end{bmatrix} .$$

Using formula (10) we then multiply this inverse times the matrix of correlations between the explicitly selected variables and the incidentally selected variables:

$$\underset{\underline{c}_{xx}^{-1}}{\begin{bmatrix} 1.775 & -1.076 \\ -1.076 & 1.775 \end{bmatrix}} \times \underset{\underline{c}_{xy}}{\begin{bmatrix} .30 & .01 & .20 \\ .01 & .15 & .30 \end{bmatrix}} = \underset{\underline{w}_{xy}}{\begin{bmatrix} .521 & -.144 & .032 \\ -.340 & .255 & .318 \end{bmatrix}}$$

Matrix $w_{xy}$ is the matrix of beta weights for predicting the incidentally selected variables from the explicitly selected variables.

To find $\underline{C}_{xy}$, the unbiased correlation matrix, we now use formula (14):

$$\underset{\underline{C}_{xx}}{\begin{bmatrix} .99 & .80 \\ .80 & .99 \end{bmatrix}} \times \underset{\underline{w}_{xy}}{\begin{bmatrix} .521 & -.144 & .032 \\ -.340 & .255 & .318 \end{bmatrix}} = \underset{\underline{C}_{xy}}{\begin{array}{|ccc|l} \text{D.T.} & \text{Inc.} & \text{Crs.} & \\ .24 & .06 & .29 & \text{MCAT} \\ .08 & .06 & .34 & \text{GPA} \end{array}}$$

starting with moderate correlations in the biased sample between the variables used explicitly in selecting the sample, a removal of bias, which raises the estimate of these correlations to a moderately high level, will not appreciably elevate the correlations between the explicitly selected variables and the incidentally selected variables. In fact, in some cases their unbiased estimate will go down.

In considering selection using many variables one must keep in mind two extreme cases: (1) the case where selection is based upon highly intercorrelated variables, e.g., in the case of medical school students, high school grade-point-average, pre-medicine college grade-point-average, Medical College Aptitude Test scores, and (2) the case where selection is based upon many independent variables, e.g., the case of college fraternity members, high parental income, pleasing appearance, social presence, minimum grade-point-average, etc.

In the first case, high intercorrelations among the explicitly used selection variables implies that only a few independent dimensions form the basis for selection. If the unbiased correlations among a set of incidental variables are not high to begin with, one would not expect that more than a very few of them will show the effects of restriction of range through incidental selection on these explicitly used but highly intercorrelated variables. However, restriction of range on each of these highly intercorrelated, explicitly used selection variables can be quite severe without excessively limiting the number of persons who will be selected. This is because setting high standards on one of them will *ipso facto* set high standards on the others.

In the second case, low intercorrelations among the explicitly used selection variables implies that many independent dimensions form the basis for selection. There is thus a likelihood that in restricting the range of each of these variables would also restrict the range of a large number of the incidentally selected variables. Hence, one could expect that by removing restriction of range in the case of each of the explicit selection variables one would change considerably the apparent correlations between the explicit selector variables and the incidentally selected variables and among the incidentally selected variables as well. However, if one restricts severely the range on many selector variables, he will have only a very small number of subjects who will be able to meet the minimum standards on all of these variables. The greater the number of independent variables used for selection purposes, the fewer the number of persons who will be able to meet the minimum standards on all of them.

Up to now, we have discussed the effects of restriction of range under the assumption that we have available knowledge of parameters concerning some variables in question from which we can deduce the unbiased estimate of the relationships among them. However, at the present time in most situations we do not have this thorough knowledge about the parameters governing the range of certain variables. Thus, one should not speculate too much without any evidence to guide him. For example, in the case of college students it is often said that they are a highly homogeneous group of people. Excluding the type of personality theory that claims people are made up of just a few global abilities (this view is indefensible in terms of current psychological knowledge), to argue for the homogeneity of college students one would have to argue that they are restricted in range on many independent abilities. But how much are they restricted on each of these abilities? To argue for any appreciable effect from restriction of range, one would have to argue that they are severely restricted on only one ot two of these independent abilities. For example, consider that in the present population there are 200,000,000 persons. Of these, 50 million have been able to meet the requirements to obtain a college education. How many independent dimensions must we consider to account for selecting this many persons from the general population? If we consider that we select the college educated persons in our country on the basis of two independent dimensions, and supposing that we accept only the top third of the general population (i.e., 66 million persons) on the first dimension, we could only restrict the selection on the second dimension to the top 3/4 of the general population. That is to say, 50 million = 1/3 x 3/4 x 200 million. If we consider that more independent dimensions than these are used in selection, we could not expect as severe restriction on any of them: the larger the number of independent dimensions which enter into the selection of college level people in our society, the less will there be an appreciable restriction of range on any of these dimensions. Thus, in our opinion college students could be homogeneous in only a few dimensions--if at all.

This rationale concerning college level persons in our society applies to the question of the selection of medical students. We do not feel that medical students are very much more restricted in range on academic ability than most college graduates. As far as restriction is concerned on other important variables we feel that if anything it is minimal... Thus we believe that in general the restriction of range argument will apply only to a few of those variables in our study, and will not change appreciably the magnitude of most of the correlations among the variables that we found.

# Chapter VI

## Summary

An obviously desirable goal of professional medical education is that of selecting and developing people who will be outstanding rather than mediocre researchers, academicians, and practicing physicians. Yet there is growing evidence of differences in the performance of physicians and those who are mediocre as physicians did somehow matriculate through the rigorous system of our medical schools. As possible casual factors in our falling short of this target one can readily formulate at least the following: (1) the admitting of some applicants to our medical schools who do not possess the critical attributes, whatever they may be, that are necessary for later performance as outstanding physicians, and (2) some failures in finding the almost magic formula of the kinds of training activities that foster and develop the critical attributes prerequisite to outstanding performance as physicians. Both of these potential factors are very important, each being worthy of extensive investigation and research. The research presented in this report is most directly related to the first, that of selecting the kinds of persons most likely to become successful physicians.

As anyone in medical education will testify, the training and development of medical students is a very costly enterprise. As a consequence, medical schools in this country are not numerous and their student bodies tend to be relatively small. To compound the problem, during the past two decades literally thousands of aspiring young doctors have tended to apply annually for admission to our medical schools which can only accept a portion of these applicants. In turn, medical school deans have tended to increasingly rely upon formal selection programs to assist them in deciding who among their numerous applicants should be admitted and who should be turned away. However, in relying upon these selection programs, medical educators have committed themselves---whether they are aware of it or not---to letting the selection techniques define the characteristics applicants have to possess to be encouraged or allowed to enter medical education and training. In other words, they have made the assumption that the selection programs accurately assess the relevant attributes and abilities of applicants and will isolate those persons to be admitted into medical school who possess the critical characteristics necessary for performance as an outstanding physician.

Unfortunately, in the light of present evidence this assumption does not appear too valid. By and large, selection programs have been developed and validated in terms of successful performance in medical school. Stated differently, selection programs tend to isolate those persons who possess attributes that are necessary for performance as an outstanding medical school student. It does not necessarily follow, however, that just because an individual can perform well in medical school that he will also perform well as a practicing physician. This is a question that can be answered through scientific evidence. In fact, as documented in Chapter I both sophisticated opinion and empirical research over the past ten years have been accumulating which seriously question such an assumed, positive relationship between medical school performance and later performance as a practicing researcher, academician, or physician. Thus, in the area of selecting people for admission to medical school there has been a need for studies exploring the relationship between medical student characteristics and later performance in the many areas of medical practice so that selection may be based on appropriate variables, especially on variables that are pertinent to quality of performance as a practicing physician, not just to variables relevant to student performance in the current type of medical education programs.

In view of the state of present-day research knowledge, however, even studies of the relationship between medical student characteristics and later performance as a physician are premature. Specifically, before exploring such a relationship we first need to know more about "what is a successful physician?" Once we have a toe-hold on this difficult area of measuring on-the-job criteria of successful performance, we are then in a position to determine the relationships, if any, between such criteria and both achievement in medical education and medical school selection techniques. Unfortunately, and despite the obviousness of this need, even a hasty glance at research in medical school selection and training will quickly indicate that studies on the criteria of successful performance in the field of medicine tend to be very few in number, narrow in scope, and quite limited in their application to the present problems.

The material presented in this report, represents an exploratory study designed to fill this need. It describes a research project in which an attempt was made to study the complexity of the performances of physicians in their practice and to measure as many of these performances as possible. In so doing, we do not feel that we have exhausted even a greater part of the possible criterion dimensions that pertain to physicians' performances in their work-a-day world. However, we have made real progress. We anticipate that other researchers will follow and explore areas of physician performance that we have missed or not yet adequately covered.

The guiding premise or orientation of this initial project was simple, straightforward, and obvious---that physician performance, whether it be as a researcher, teacher, or clinician, is a complex phenomenon. When one speaks of "successful performance as a physician," he should not be misled into thinking this is a simple thing, easily measured by a few variables, such as income, mortality rate, or peer evaluations. Instead, one should expect that many dimensions are needed to describe the various aspects of the performance of physicians.

Accordingly, we began by analytically isolating what we felt were the major dimensions of medical practice. In terms of training, interests, and on-the-job performances, at least three "types" of practice seemed apparent: the general practitioner, the medical specialist, and the medical faculty member. Thus, our project was divided into three individual phases or studies. In the first phase, 102 full-time faculty members of a College of Medicine were studied. These faculty members included both medical teachers and researchers. In the second study, a group of 190 certified medical specialists, representing all areas of medical specialization, was investigated in detail. However, since only about 10% of the medical specialists practice in rural areas this number was limited to specialists practicing in urban, metropolitan areas. In the third phase we studied non-certified, general practitioners. Because we felt there were possible differences in the community settings of rural and urban general practitioners which would influence our findings, we investigated the physicians in these settings separately. This led, therefore, in the third phase to one general study, comprising a combined group of both urban and rural general practitioners, and two sub-studies, one of which was concerned with rural general practitioners and the other with urban general practitioners.

Obviously, merely separating physician performance into three categories, such as educator, specialist, and general practitioner, is not studying performance as a multi-dimensional, complex phenomenon. More than this is required. Toward this end, the project staff resorted to still other techniques to encompass this complexity. Specifically, for each phase of the project a prolonged process of data collection was implemented. In so doing, a thorough search was made of all available records and published sources of information to compile as much data as possible on all physicians that fell into the population or type of practice being studied. This was followed by an intensive structured interview with the doctors in each of the project's phases. All totaled, some 200 measures relevant to physician performance were collected on each of the physicians that participated in the project. Unfortunately, the electronic computer program used to analyze the data would only allow a maximum of 80 measures. Nevertheless, a big chunk of physician performance was analyzed by combining some of the initial sources. Thus, for each phase of the project, we analyzed those 80 separate or combined performance measures which the project staff judged to be most appropriate as criterion measures of physician performance.

Our analysis included data concerning the physician's office practice (e.g., size, appointment schedule, house calls, type of illnesses treated), hospital affiliations and activities, consultation and referral practices, methods of keeping abreast, medical and laboratory equipment, ancillary staff, emphasis on psychosomatic medicine, use of drug detail men, medical research activities, publications, honorary awards received, professional society memberships and activities, medical charity work, income, avocational activities, leisure activities, and vacation activities, and other more specific areas. In addition, information regarding education and training, medical school activities, medical board certifications, selected biographical data, listings in honorary compendiums, peer ratings and evaluations, and self-ratings and evaluations for medical contributions, characteristics the physician felt were needed for success in medicine, and degree of satisfaction derived from various medical activities, were all incorporated into our data analysis.

In our data analysis for each phase of the project, we found ourselves confronted with a mass of observations or measures which came to us in a semi-organized and occassionally almost chaotic form. In its raw data form, as indicated in the foregoing paragraph, we had collected literally tens of thousands of measures on the individual physicians that perticipated in our studies. Thus, the major concern in our data analysis for each phase of the project became that of reducing this initially vast and almost unmanageable array of data into a small number of conceptually manageable categories. Towards this end, we have relied primarily upon a statistical method called factor analysis to reduce the vastness of our data to manageable form. At the expense of oversimplification, factor analysis can be described as a statistical tool which assists the researcher in categorizing a complex phenomenon, such as our total set of measures of physician performance, into a limited number, say from 0 to 30, of comprehensive concepts or factors. It starts with a table of interrelations (intercorrulations) between variables that are to be analyzed (in this case, our 80 measures of physician performance). In the computations, it observes and analyses these patterns of interrelations and isolates several clusters (factors) of variables that are relatively independent of other related clusters of variables. In so doing, the complexity of the interrelations is reduced to a few clusters (or categories or factors) which can then be interpreted in terms of their underlying nature. In short, factor analysis provided a powerful and interesting analytical view of our data, together with a relatively clear and sound basis for organizing our measures of physician performance into shortened profiled or descriptions of physician performance and accomplishments.

In terms of results, our factor analyses uncovered between 25 and 30 factors or categories for each sample of physicians studied. Specifically, for the study of the full-time faculty of the College of Medicine 25 factors were found, described, and intrepreted. For the study of certified medical specialists 29 factors were found. For the urban general practitioner sample 28 factors, for the rural general practitioner sample 28 factors, and for the general study comprising both urban and rural general practitioners 30 factors were isolated. In retrospect, then, even though we employed a statistical technique that reduced our mass of data to a minimum number of conceptually manageable categories, the complexity of physician performance still emerged as a very forceful finding. Approximately one independent factor or dimension of performance was obtained in each factor analysis for every three performance measures. Accordingly, this means that physician performance cannot be adequately assessed by a mere handful of performance measures. Instead, it means that there are many outlets through which a physician can expend his energies and efforts. Consequently, in assessing the overall accomplishments and contributions of an individual it is not appropriate to categorize him as a good or bad physician, but to determine in which outlets he has expressed himself and how effectively he had achieved in each of them. Admittedly, this is not simplifying evaluation: however, it is coming closer to approximating both the professional and lay observation that physician performance is a complex phenomenon not to be explained by a single unitary concept or measure.

A second, very consistent finding of this research was that academic achievement does not bear a positive relationship to performance as a practicing researcher, academician, or physician. On the contrary, in each of our five studies both premedical and medical school achievement was found to be essentially independent of the numerous measures of professional contributions, accomplishments, and activities, that we analyzed. In fact, in Chapter V we saw that across all groups studied in this report, academic grades showed a zero (chance) relationship to our measures of physician performance. In view of this, medical school selection programs, which tend to select students that have attributes necessary for successful accomplishment in medical school and assume that these same attributes are also necessary for performance in medical practice, should be searchingly examined.

Most important of all, though, was the finding that highly trained professional groups, such as physicians, are not only amenable to psychological investigation but that meaningful criterion data can be collected from them. This is amply demonstrated by the mass of data that we have gathered covering numerous aspects of physician performance. Moreover, such research does not have to be fragmented pieces of isolated areas of performance. In the present project, all of the major divisions of medical practice have been studied in a single, integrated project. As such, the whole gamut of medicine has been explored (i.e., the teacher, the researcher, the medical specialist, and the general practitioner) with similar techniques and methodology. Thus, even though this research paradigm has been exploratory, it provides a basis or orientation from which future research can build in a systematic manner.

In the first part of this chapter it was stated that studies of the relationships between medical school selection techniques, medical school achievement and on-the-job performance as a practicing physician were premature until someone first developed criteria of successful performance as a medical educator, researcher, or physician. Since the material reported in this paper at least partially fills this need, it might be appropriate to conclude this report by briefly mentioning our future plans in which we hope to develop devices for selecting medical school students which, for the first time, will be based on performance as a practicing physician, rather than solely on performance as a student in a highly artificial academic setting. In so doing, a sizeable battery of potential predictors of physician performance will be evaluated in terms of their ability to predict the criteria of physician performance we have developed and reported in this paper. It is felt, however, that we should not rely on the usual academic predictors, such as premedical grades and typical aptitude tests, because, as our results have shown, performance in medical education is generally unrelated to performance as a practicing physician or medical educator or researcher. On the other hand, a considerable body of research has been accumulating suggesting that biographical inventories and self-ratings can be used successfully in this area. Accordingly, in the next year-and-a-half of this ongoing research a number of biographical and self-rating scores will be developed to predict the many dimensions of physician performance we have found in this present research. If successful, the medical profession would be able to select its students more on the basis of attributes or abilities related to performance as an outstanding physician.

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# APPENDIX A

## Tit~~el~~le, Source, and Description of Scoring System for Each Variable For College of Medicine Full-Time Faculty Sample

### Variable 1

Title: Present Academic Rank

Source: 1961-1962 College of Medicine Bulletin, University of Utah

Description: The 1961-1962 Bulletin of the College of Medicine contains a detailed statement of all faculty members and their academic rank for this school year. The recorded raw scores for this variable consisted of giving each faculty member's academic rank one of the following four scores: "4" if his rank was Professor, "3" if his rank was Associate Professor, "2" if his rank was Assistant Professor, and "1" if his rank was Instructor.[14] No differentiation was made between research and academic ranks.

### Variable 2

Title: Average Number of Medical School Committee Memberships Per Year for Last Five Years

Source: 1957-1958, 1958-1959, 1959-1960, 1960-1961, and 1961-1962 College of Medicine Bulletins, University of Utah

Description: The annual Bulletins of the College of Medicine contain a detailed statement of all committees, their members, and their officers. From this source it was determined how many of the committees each faculty member had served on for the 5-year period, 1957-1958 through 1961-1962. The total number so derived was then divided by 5 to give an average for the 5-year period. This served as the raw score for the variable. Also, the raw scores were adjusted to a 5-year estimate for those faculty members who had serve less than 5 years.

### Variable 3

Title: Total Number of Medical School Committee Memberships During Last School Year

Source: 1961-1962 College of Medicine Bulletin, University of Utah

Description: The 1961-1962 Bulletin of the College of Medicine contains a detailed statement of all committees, their members, and their offices. From this source, it was determined how many of the committees each faculty member had served on for the 1961-1962 school year. This served as the raw score for the variable.

### Variable 4

Title: Average Number of Medical School Chairmanships Per Year for Last Five Years

Source: 1961-1962, 1960-1961, 1959-1960, 1958-1959, and 1957-1958 College of Medicine Bulletins, University of Utah

Description: The annual Bulletins of the College of Medicine contain a detailed statement of all committees, their members, and their officers. From this source it was determined ho many of the committees each faculty member had served on as a chairman for the 5-year period 1957-1958 through 1961-1962. The total number so derived was then divided by 5 to give an average for the 5-year period. This served as the raw score for the variable. Also, the raw scores were adjusted to a 5-year estimate for those faculty members who had served less than 5 years.

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[14] Raw scores on all variables, with the exception of the two dichotomous control variables (Variables 79 and 80) were converted to T-scaled standard scores (Guilford, 1950 pp. 2960392) with a mean of 50 and a standard deviation of 10. These standardized scores were used in the data analysis.

### Variable 5

**Title:** Total Number of Medical School Committee Chairmanships During Last School Year
**Source:** 1961-1962 College of Medicine Bulletin, University of Utah
**Description:** The 1961-1962 Bulletin of the College of Medicine contains a detailed statement of all committees, their members, and their offices. From this source, it was determined how many of the committees each faculty member had served on as a chairman for the 1961-1962 school year. This served as a raw score for the variable.

### Variable 6

**Title:** Total Number of Publications in Scientific and Professional Journals During Career
**Source:** Curriculum Vita
**Description:** Each participating faculty member was requested to submit a current curriculum vita containing publications, society memberships, offices held in societies, professional positions, and honors or awards received. The record raw score was obtained by simply totaling the number of publications indicated on each faculty member's list of publications.

### Variable 7

**Title:** Average Number of Journal Publications Per Year Since Receiving M.D. or Ph.D.
**Source:** Curriculum vita
**Description:** Each participating faculty member was requested to submit a current curriculum vita containing publications, society memberships and offices held, professional positions, and honors or awards received. The recorded raw score was obtained by dividing the number of publications indicated on each faculty member's list of publications by the number of years lapsed since each faculty member received his first doctorate (M.D. or Ph.D.).

### Variable 8

**Title:** Average Career Level of Contribution to Publications as Indicated by Senior vs. Junior Authorship Status
**Source:** Curriculum vita
**Description:** Each participating faculty member was requested to submit a current curriculum vita containing publications, society memberships, offices held in societies, professional positions, and honors or awards received. For each faculty member every publication listed was given one of 3 scores: "3" if the faculty member was the sole author, "2" if he was the senior author, and "1" if he was a joint author. The scores thusly derived for each faculty member's publications were then totaled and divided by the number of years lapsed since he received his first doctorate (M.D. or Ph.D.).

## Variable 9

**Title:** Promotion Rate in College of Medicine

**Source:** Curriculum vita, College of Medicine records

**Description:** Each participating faculty member was given a score of "1" for his first position in the University of Utah Medical School and an additional "1" for each position thereafter at the University of Utah that represented an advancement over his previously held position. The "1's" were then totaled for each faculty member and divided by the number of years he had held a faculty position(s) in the medical school. This consisted of the recorded raw score.

## Variable 10

**Title:** Total Number of Professional Positions Since Receiving M. D. or Ph.D.

**Source:** Curriculum vita

**Description:** The recorded raw scores consisted of the total number of professional positions directly related to the medical profession that each participating faculty member had held since receiving his first doctorate, whether M. D. or Ph.D. Internship and residency positions were not counted. Also, those faculty members whose records were not complete with regard to professional positions held since their first doctorate were not considered in the scoring.

## Variable 11

**Title:** Mobility Rate in Professional Positions Since Receiving M. D. or Ph.D.

**Source:** Curriculum vita

**Description:** This score was intended as a rough index of promotion rate within the medical profession. It was obtained by first listing in a sequential order all professional positions directly related to the medical profession held by each participating faculty member since obtaining his first doctorate (M. D. or Ph.D.). Internship and residency positions were not counted. Then, starting with the first position held since the first doctorate, each faculty member was given a score of "1" for his first position and each position thereafter which was judged by the project staff to represent an advancement over the immediately preceding position held. With the exception of the first position held since the first doctorate. All positions which were not judged to represent an advancement over the immediately preceding position were scored zero. Any positions which were not judged to be directly related to the medical profession were also given a score of zero. Finally, all "1" scores were totaled and divided by the total number of years elapsed since he had completed his residency.

## Variable 12

**Title:** Total Number of Hospitals Employed in During Residency

**Source:** Curriculum vita

**Description:** Each participating member of the faculty was requested to submit a current curriculum vita containing all positions held during internship and residency training. From the vita of each faculty member a list of all non-duplicate positions whose title included the term "resident" was compiled. From this list a raw score was derived by simply counting the number of different hospitals contained within the list.

### Variable 13

Title: Total Number of Years Spent in Residency
Source: Curriculum Vita
Description: A search was made of each participating faculty member's curriculum vita, resulting in a list of all non-duplicate positions held whose title included the term "resident." From this list a raw score was derived by simply counting the total number of years occupied in these positions.

### Variable 14

Title: Number of American Board Specialty Certifications
Source: Curriculum vita
Description: The recorded raw score consisted of the total number of recognized specialty certifications each particpating faculty member had indicated in his curriculum vita as having received. Only those certifications approved by the Advisory Board for Medical Specialties of the American Medical Association were recognized and scored (see American Medical Directory, 21st edition, 1962).

### Variable 15

Title: Average Quality of Specialty Certifications
Source: Curriculum vita
Description: All recognized specialty certifications each participating faculty member had indicated as having recieved in his curriculum vita were posted on a master list and submitted to the Dean of the College of Medicine for evaluation on a 5-point scale. Only those certifications approved by the Advisory Board for Medical Specialties of the American Medical Association were included in the master list. Then, each faculty member's recognized certifications were assigned their appropriate quality score. These were then totaled and averaged to yield the posted raw scores.

### Variable 16

Title: Total Number of Listings in Honorary Compendiums
Source: Honorary compendiums
Description: A master list was compiled of all members of the College of Medicine full-time faculty who had participated in the study. A search was then made of the most current editions of the following compendiums to determine if the faculty members were listed therein: American Men of Medicine, American Men of Science, Who's Who in the West, Who's Who in American Education, Who's Who in America. The resultant raw score for each faculty member was the total number of times he was listed in these compendiums.

### Variable 17

Title: Number of Times Nominated as Outstanding Contributor by Colleagues in College of Medicine.
Source: Interview
Description: Each participating full-time faculty member was asked: (1)"Could you name three or four persons on the medical school faculty who you believe have made outstanding contributions to the medical profession, taking into consideration their number of years as a physician as well as limitations of time and opportunity," and (2) "Could you name three or

four physicians on the faculty who will make outstanding contributions in the future?" Although these two questions were intended to isolate those who had made outstanding contributions from those who will make outstanding contributions, a preliminary analysis of the responses indicated that the overlap between the two questions was considerable and that they should be treated as one in the data analysis. Thus, the recorded raw scores consisted of the total number of times each faculty number had been mentioned by his full-time faculty colleagues on both questions.

### Variable 18

**Title:** Number of Times Nominated as Outstanding Teacher by Medical Students
**Source:** College of Medicine medical students
**Description:** Form letters were mailed to all students in the College of Medicine enrolled in the academic year 1961-1962. Each student was asked to nominate the three outstanding teachers in each of the years which they had completed. In other words, freshmen nominated for the first year, sophomores for the first and second years, etc. In addition, all students were asked to nominate younger faculty members who would be "outstanding teachers in the future." All student nomination forms returned prior to an arbitrary cutoff date (July 18, 1962) were included in the analysis. Approximately 62% of the students had returned their nomination forms prior to this cutoff date, and as of August 15, 1962, an additional 5% had returned forms which were not included in the analysis.

The total nominations received by each faculty member as an outstanding teacher for each year of medical school (not by each class) was tallied, as was the number of nominations as a future outstanding teacher. A score of zero was given to each teacher who was eligible for nominations but did not receive any. Some difficulties were encountered in assigning zero scores for nominations as a younger faculty member since the students had no clear idea of what "younger" meant and gave such nominations to men in their middle fifties. Finally, it was decided to arbitrarily give a zero score on this variable to all faculty members who completed their "Bachelor's" work less than 20 years ago and who received no nominations in this category. No adjustment was made for the fact that a faculty member was not eligible for nomination in this category by an individual student if he had already been nominated as an outstanding teacher in any of the years of medical school.

Each of the five nomination distributions (the four medical classes and the outstanding younger men) were converted individually to T-scores. An average score was computed for each faculty member by summing his T-scores and dividing by the number of T-scores. Faculty members, of course, did not have any T-score in years in which they did not teach. These averages formed the raw scores for this variable. (As a check on the adequacy of this score, it was correlated with the highest T-score obtained by each faculty member in any one year. The correlation was .93).

### Variable 19

**Title:** Department Head's Rating of "Clinical Excellence"
**Source:** In general, department heads for clinical departments of the College of Medicine were contacted. However, in the departments of surgery and pathology the department heads did not agree to participate in this phase of the study. Accordingly, the Dean of the College of Medicine rated the members of these departments. In addition, the head of the department of medicine was on leave and ratings for this department were made by the acting head of the department.

Description: Heads of clinical deparmtents were asked to rate each M. D. (since this variable is not applicable to Ph. D. 's) with the following instructions:

> Please rate each of the physicians below as to his clinical excellence, using as a norm what you consider the average should be for a person of his age and years of experience.

Ratings were made on a five category scale with the categories, Below Average, Average, Somewhat Above Average, Considerably Above Average, and Outstanding.

## Variable 20

Title: Number of Current Memberships in Scientific and Professional Societies
Source: Curriculum vita
Description: All participating faculty members were requested to submit a curriculum vita containing a list of all current memberships in scientific or professional societies. The recorded raw score consisted of the total number of scientific or professional memberships listed by each faculty member in his vita.

## Variable 21

Title: Average Judged Quality of Societies in Which Membership is Current
Source: Curriculum vita
Description: All participating faculty members were requested to submit a curriculum vita containing a list of all current memberships in scientific or professional societies. All different societies were collected, listed and submitted to the Dean of the Medical School and some of his selected colleagues for evaluation on a 5-point scale. Some of those societies not evaluated by this group of judges which were familiar to members of the project staff were subsequently evaluated by them on a similar 5-point scale. Those societies not evaluated by any of the aforementioned were not considered in the scoring. Then, all professional societies in which each subject was a member and which quality judgements had been made were assigned the so derived weights. The weights for each faculty member's societies were then totaled and divided by the number of societies comprising the total number to yield the recorded raw scores.

## Variable 22

Title: Net Income from Medical Profession
Source: Interview
Description: Each participating faculty member was requested to indicate on a 9-category scale ranging from "under $10,000" to "over $100.000" his approximate net income derived from only the medical profession during the last year. The resultant score was not the net amount of income per se, but in which category his income fell. Thus, each faculty member received a raw score from 1 to 9 for net income.

## Variable 23

**Title:** Self-Reported Number of Research Contributions Made to Medicine
**Source:** Interview
**Description:** As part of the interview, each participating faculty member was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by each faculty member in response to (1) and (2) were listed under one of 5 headings: teaching, research, administrative, professional society activities, and miscellaneous category. The derived raw score was the total number of responses made by each faculty member which was classified in the research heading. (Originally, (1) and (2) above were intended to yield two scores: however, inspection of the responses indicated the two items were yielding the same information and were not differentiating different content areas ).

## Variable 24

**Title:** Average Judged Quality of Self-Reported Research Contributions
**Source:** Interview
**Description:** As part of the interview, each participating faculty member was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by each faculty member in response to (1) and (2) were listed under one of 5 headings: teaching, research, administrative, professional society activities, and a miscellaneous category. The so listed contributions were then submitted anonymously to the Dean of the Medical School for evaluation on a 5-point scale in terms of judged quality of each of the contributions These quality weights for the responses of each physician that were classified in the research heading were then totaled and averaged; thus yielding the resultant raw scores. (Originally, (1) and (2) above were intended to yield two scores: however, inspection of the responses indicated the two items were yielding the same information and were not differentiating different content areas).

## Variable 25

**Title:** Self-Reported Number of Non-Medical Contributions to Society
**Source:** Interview
**Description:** As part of the interview, each participating faculty member was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by a given faculty member in response to (1) and (2) which were not directly related to the medical profession, science, and/or the University but which were related to society in its broadest sense were totaled to yield the recorded raw score. (Originally, (1) and (2) above were intended to yield two scores: however, inspection of the responses indicated the two items were yielding the same information and were not differentiating different content areas).

## Variable 26

**Title:** Total Number of Current Research Grants

**Source:** Interview

**Description:** Each participating faculty member was asked to indicate by title, granting agency, and amount of grant any current research projects for which he had been granted financial support. In those cases in which multiple persons were receiving financial support from a single grant, a grant was considered held if he claimed his name would have appeared on "most" of the publications which would or could result from the grant. The resultant raw score was simply the number of research grants which were considered held by the above criteria.

## Variable 27

**Title:** Average Amount of Current Research Grants

**Source:** Interview

**Description:** Each participating faculty member was asked to indicate by title, granting agancy, and amount of grant, any current research projects for which he had been granted financial support. In those cases in which multiple persons were receiving financial support for a single grant, the faculty member was asked to indicate the amount of money of the grant for which he was responsible or had been appropriated to him. In this case, his score for that grant was the amount so determined. In the event a faculty member was working on a grant but wasn't aware of the amount appropriated to him, the senior author of the grant was contacted and asked to specify the amount that was being used by this faculty member. The amount specified by the senior author served and the faculty member's score for that grant. If he was the only investigator of a grant his score for that grant was the amount of the grant. In those cases in which the grant covered a period of over one year, the above procedures were applied, but the score obtained for the faculty member for the grant was the total amount of the grant divided by the number of years which the grant covered. The so derived scores for each faculty member for each grant were totaled and then averaged to yield the resultant raw scores.

## Variable 28

**Title:** Total Number of Research Grants Received During Career

**Source:** Interview

**Description:** The recorded raw score was the number indicated in response to the question: "During your career, what is the approximate total number of grants you aave received?" A grant received was described as one in which a faculty member had been sole or joint author of a formal proposal submitted to a granting agency requesting appropriations of any amount which was subsequently approved and granted by the granting agency concerned. In the event, a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

## Variable 29

**Title:** Total Number of Publications in Last Two Years

**Source:** Interview

**Description:** The raw score for this variable was the number elicited in response to the question: "How many publications do you estimate you have produced in the last two years?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score 7.5.

### Variable 30

**Title:** Self-Estimated Number of Publications in Next Two Years

**Source:** Interview

**Description:** The raw score for this variable was the number elicited in response to the question: "How many publications do you estimate you will produce in the next two years?"

### Variable 31

**Title:** Self-Estimated Comprehensiveness of Publications in Next Two Years

**Source:** Interview

**Description:** The first score derived towards the raw score for this variable was the number elicited in response to the question: "How many publications do you estimate you will produce in the next two years?" For the second score, each participating faculty member was asked to indicate what type of publications these would be and his responses were scored as follows: for every "full-scale" type of publication 4 points were given, for every "progress" type of publication 3 points were given, for every "brief" type of publication 2 points were given, and for every "abstract" type of publication 1 point was given. The second scores were then totaled to yield a single composit score for each faculty member. The recorded raw score was derived by multiplying the first score by the second composite score.

### Variable 32

**Title:** Total Number of Papers Presented at Scientific and Professional Meetings During Career

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many papers have you read at scientific or professional meetings during your career?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 33

**Title:** Average Number of Speeches to Laymen Groups Per Year

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "Approximately how many times a year, during the past few years, have you addressed laymen groups?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 34

**Title:** Number of Times Research Has been Reported in Mass Media During Career

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "During your career, approximately how many times has your work been written up or referred to in mass media such as newspapers and magazines?" In the event that a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 35

**Title:** Average Number of Hours Per Week Spent in Clinical Teaching of Medical Students
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many hours (approximately) do you spend on clinical teaching, e.g., grand medical rounds?" In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 10-15; raw score 12.5. When the response was in some unit other than per week, e.g., per day, per quarter, it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year, 12 weeks per school quarter, and 37 weeks per school year.

### Variable 36

**Title:** Average Number of Formal Medical Consultations Called Into Annually
**Source:** Interview
**Description:** The recorded raw score was the number elicited in response to the question: "In the past 12 months, approximately how many times were you called into formal consultation on a medical problem?" In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5. When the response was in some unit other than per year, e.g., per week, per day, it was converted accordingly on the basis of a 5-day week with 52 weeks in the year. Formal consultation was defined in terms of any opinion on a medical problem which was requested and submitted in writing.

### Variable 37

**Title:** Average Number of Informal Medical Consultations Called Into Annually
**Source:** Interview
**Description:** The recorded raw score was the number elicited in response to the question: "In the past 12 months, approximately how many times were you called into informal or curbstone (telephone) consultation on a medical problem?" In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5. When the response was in some unit other than per year, e.g., per week, per day, it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year.

### Variable 38

**Title:** Average Number of Society Meetings Attended Annually
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many professional and scientific meetings do you attend annually?" In the event that a range was given for a response, the mid-point of the interval was taken as the raw score: e.g., response, 20-25, raw score, 22.5. Also, no differentiation was made as to type of meeting, i.e., state and county meetings were scored the same as national meetings.

### Variable 39

**Title:** Number of Current Memberships in Civic and Political Organizations
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "Of approximately how many civic or political organizations are you a member?" In the event a range was given for a response, the mid-point of the interval was recorded as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 40

**Title:** Number of Offices Held in Civic and Political Organizations
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "Number of offices held?", which immediately followed the question, "Of approximately how many civic or political organizations are you a member?" In the event a range was given for a response, the mid-point of the interval was recorded as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 41

**Title:** Total Number of Scientific and Professional Awards Received During Career
**Source:** Interview
**Description:** This item of the questionnaire form required each participating faculty member to indicate any honors or awards, such as honorary degrees and prizes for research contributions, he had received during his career. Those honors or awards indicated on the faculty member's curriculum vita were also included. Only honors or awards directly related to recognition for outstanding achievement in the medical profession were considered: e.g., fellowships, honorary scholastic societies, and academic appointments were not considered. The resultant raw score was comprised of the total number of acceptable honors or awards received.

### Variable 42

**Title:** Average Judged Quality of Awards Received
**Source:** Interview
**Description:** This item of the questionnaire form required participating faculty members to indicate any honors or awards, such as honorary degrees and prizes for research contributions, he had received during his career. The honors or awards indicated on the faculty member's curriculum vita were also included. Only honors or awards directly related to recognition for outstanding achievement in the medical profession were considered: e.g., fellowships, honorary scholastic societies, and academic appointments were not considered. Then, all acceptable, different honors or awards were listed anonymously and submitted to the Dean of the Medical School for evaluation on a 5-point scale in terms of the judged significance of each of the honors or awards. The so assigned weights were then assigned to each faculty member's acceptable honors or awards, totaled, and averaged to determine the resultant raw scores.

### Variable 43

**Title:** Number of Subscriptions to Scientific and Professional Journals
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "To how many journals do you actually subscribe?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25, raw score, 22.5.

### Variable 44

**Title:** Number of Scientific and Professional Journals Reviewed Regularly
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many journals do you review regularly?" In the event that a range was given for a response, the midpoint of the interval was taken as the raw score, e.g., response 20-25; raw score, 22.5.

### Variable 45

**Title:** Number of Articles in Scientific and Professional Journals Read in Detail Each Month
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question, "How many articles do you read in detail each month?," which immediately followed the question, "How many journals do you review regularly?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 46

**Title:** Number of Techniques Other Than Journals and Meetings Used in Keeping Abreast of Field
**Source:** Interview
**Description:** The derived raw score was simply the total number of different techniques elicited by participating faculty members in response to the question: "Are there any other techniques (other than journals or scientific and professional meetings) that you use to keep abreast (in your field or specialty)?" A response indicating journals or society meetings was disregarded in the scoring since these are covered elsewhere (Variables 38, 43, 44, and 45).

### Variable 47

**Title:** Total Number of Offices Held in Scientific and Professional Societies During Career
**Source:** Curriculum vita and Research File Form
**Description:** All participating faculty members were requested to submit an up-to-date curriculum vita containing a list of all current memberships and offices held in scientific and professional societies. The Research File Form contains similar information drawn from various compendium sources. The recorded raw score was simply the number of offices listed in these two sources (appropriate corrections were made for duplications in the two sources). The type of membership, e.g., honorary, fellow, etc., was not considered or scored as an office held.

### Variable 48

**Title:** Number of Times During Career Invited to Serve as Editor of Scientific or Professional Journal

**Source:** Interview

**Description:** The recorded raw score was the number elicited in response to the question: "During your career, how many times have you been asked to serve as a consulting editor or editor for scientific or professional journals?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 49

**Title:** Number of Acceptance of Invitations to Serve as Editor

**Source:** Interview

**Description:** The recorded raw score was the number elicited in response to the question: "During your career how many times have you accepted intivations to serve as a consulting editor or editor for scientific or professional journals?" In the event that a range was given as the response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 50

**Title:** Number of Courses in College of Medicine for Which Faculty Member is Primarily Responsible

**Sources:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many courses are you personally responsible for, i.e., those that you are personally responsible for in making up the curriculum?" In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 4-5; raw score, 4.5.

This item caused considerable confusion to both interviewers and interviewees. The basic difficulty seemed to be concerned with defining "personally responsible." Heads of departments seemed to feel they were personally responsible for all courses in their departments even though they may have been only remotely involved with a given course's curriculum. Instructors who developed and taught only a portion of a given course also had difficulty in responding to the question. Practitioner or clinical courses were also hard to define in terms of personal responsibility: specifically, instructors who had specialty ibterests, e.g., surgery, accompanied students on "grand rounds" and gave spontaneous lectures to the students concerning the available specialty patients. In this situation, no curriculum was developed but the instructor was certainly personally responsible. In general, the faculty members were encouraged to discuss these problems concerning the question, and then instructed to respond to the question as best they could.

### Variable 51

**Title:** Number of Courses in College of Medicine for Which Faculty Member is a Supplementary Instructor

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many courses do you participate in as additional instructor?" An "additional instructor" was described as one who gave a specific series of lectures or hours on a specified topic(s) as a scheduled part of a regular College of Medicine class lasting at least one school quarter. In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response 3-5; raw score, 4.

### Variable 52

**Title:** Number of Times During Career Invited to Serve on Scientific and Professional Advisory Boards

**Source:** Interview

**Description:** The recorded raw score was the number elicited in response to the question: "In your total career, how many times have you been asked to serve on such groups as scientific advisory boards, study sections or research proposal review panels?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 53

**Title:** Number of Acceptatnces of Invitations to Serve on Advisory Boards

**Source:** Interview

**Description:** The recorded raw score was the number elicited in response to the question: "During your career, how many times have you accepted invitations to serve on such groups as scientific advisory boards, study sections, or research proposal review panels?" In the event a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 54

**Title:** Number of Current Memberships in Social and Avocational Organizations

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "Of approximately how many social or avocational organizations are you a member?" In the event a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 55

**Title:** Number of Offices Held in Social and Avocational Organizations

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question: "Number of offices held", which immediately followed the question "Of approximately how many social or avocational organizations are you a member?" In the event a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 56

Title: Total Number of Fellowships Received
Source: Curriculum vita and Research File Form
Description: In both the curriculum vita which was requested of all participating faculty members and the Research File Form, which was collected for all faculty members from compendium sources, all educational and professional positions were requested to be listed. The raw score for this variable was obtained by merely totaling the number of different fellowships received and indicated on these two forms.

## Variable 57

Title: Average Number of Formal Research Consultations Called Into Annually
Source: Interview
Description: The recorded raw score was the number elicited in response to the question: "In the past 12 months, approximately how many times were you called into formal consultation on a research problem?" In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5. When the response was in some unit other than per year (e.g., per week, per day), it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year.

This item of the interview form also contains an "other" response category (i.e., the number of times in the past year in which the faculty member has been called into formal consultation which could not be classified as either formal medical or formal research consultation). In those few cases in which a response was given to this category, it was treated as above and added to the response given regarding the number of formal consultations on a research problem.

## Variable 58

Title: Average Number of Informal Research Consultations Called Into Annually
Source: Interview
Description: The recorded raw score was the number elicited in response to the question: "In the past 12 months, how many times were you called into informal or curbstone (telephone) consultation on a research problem?" In the event a range was given in response to the question, the midpoint of the interval was taken as the raw score, e.g., response 20-25; raw score, 22.5. When the response was in some units other than per year (e.g., per week, per day), it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year.

This item of the interview form also contains an "other" response category (i.e., the number of times in the past year in which the faculty member has been called into informal consultation which could not be classified as either informal medical or informal research consultations). In those few cases in which a response was given to this category, it was treated as above and added to the response given regarding the number of formal consultations on a research problem.

## Variable 59

tle: Self-Rated Liking for Actual Practice of Profession

urce: Satisfaction with Activities Scale

escription: Each participating faculty member was required to indicate (1) on a 4-point ale, the amount of satisfaction he derives from "actual practice in his field or specialty" d (2) the approximate percentage of his total working time that he spends in "actual actice in his field or specialty." The derived raw score was obtained by multiplying ) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. ach of the nine items concerns a common professional activity associated with medical actice. With each item, the faculty member was required to indicate (1) on a 4-point ale, ranging from "little satisfaction" to a "great deal of satisfaction," the amount of tisfaction he derives from engaging in the activity concerned, and (2) the approximate rcentage of his total working time that he devotes to that activity. As such, the nine ems are designed to encompass all of the physician's professional activities. Thus ) above for all nine items should total to 100%. In those cases where the subject failed have (2) above for all nine items equal 100%, each of the responses to (2) were pro- rtionally altered to yield the desired total of 100%.

## Variable 60

tle: Self-Rated Liking for Teaching

urce: Satisfaction with Activities Scale

escription: Each physician was required to indicate (1) on a 4-point scale the amount of tisfaction he derives from "teaching in his field or specialty" and (2) the approximate rcentage of his total working time that he spends in "teaching in his field or specialty." e derived raw score was obtained by multiplying (1) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. ach of the nine items concerns a common professional activity associated with medical actice. With each item the faculty member was required to indicate (1) on a 4-point ale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of tisfaction he derives from engaging in the activity concerned, and (2) the approximate rcentage of his total working time that he devotes to that activity. As such, the nine ems should total to 100%. In those cases in which the subject failed to have (2) above r all nine items equal 100%, each of the responses to (2) were proportionately altered yield the desired total of 100%.

## Variable 61

tle: Self-Rated Liking for Research

urce: Satisfaction with Activities Scale

escription: Each participating faculty member was required to indicate (1) on a 4-point ale the amount of satisfaction he derives from "research in his field or specialty" and ) the approximate percentage of his total working time that he spends in "research in s field or specialty." The derived raw score was obtained by mustiplying (1) and (2) by ch other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. ach of the nine items concerns a common professional activity associated with medical actice. With each item the faculty member was required to indicate (1) on a 4-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) above for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100%, each of the responses to (2) were proportionately altered to yield the desired total of 100%.

### Variable 62

**Title:** Self-Rated Liking for Studying and Reading Professional Literature
**Source:** Satisfaction with Activities Scale
**Description:** Each participating faculty member was required to indicate (1) on a 4-point scale the amount of satisfaction he derives from "studying and reading in his field or specialty" and (2) the approximate percentage of his total working time that he spends in "studying or reading in his field or specialty." The derived raw score was obtained by multiplying (1) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. Each of the nine items concerns a common professional activity associated with medical practice. With each item the faculty member was required to indicate (1) on a four-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) above for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100%, each of the responses to (2) were proportionately altered to yield the desired total of 100%.

### Variable 63

**Title:** Self-Rated Liking for Professional Consulting
**Source:** Satisfaction with Activities Scale
**Description:** Each participating faculty member was required to indicate (1) on a 4-point scale the amount of satisfaction he derives from "consulting in his field or specialty," and (2) the approximate percentage of his total working time that he spends in "consulting in his field or specialty." The derived raw score was obtained by multiplying (1) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. Each of the nine items concerns a common professional activity associated with medical practice. With each item the faculty member was required to indicate (1) on a 4-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) above for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100%, each of the responses to (2) were proportionately altered to yield the desired total of 100%.

### Variable 64

Title: Self-Rated Liking for Participation in Professional Societies
Source: Satisfaction with Activities Scale
Description: Each participating faculty member was required to indicate (1) on a 4-point scale the amount of satisfaction he derived from "participating in societies or organizations in his field or specialty," and (2) the approximate percentage of his total working time that he spends in "participating in societies or organizations in his field or specialty." The derived raw score was obtained by mustiplying (1) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. Each of the nine items concerns a common professional activity associated with medical practice. With each item the faculty member was required to indicate (1) on a 4-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) above for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100%, each of the responses to (2) were proportionately altered to yield the desired total of 100%.

### Variable 65

Title: Self-Rated Liking for Writing for Professional Literature
Source: Satisfaction with Activities Scale
Description: Each participating faculty member was required to indicate (1) on a 4-point scale the amount of satisfaction he derives from "writing journal articles, research reports, books, etc." and (2) the approximate percentage of his total working time that he spends in "writing journal articles, research reports, books, etc." The derived raw score was obtained by multiplying (1) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. Each of the nine items concerns a common professional activity associated with medical practice. With each item the faculty member was required to indicate (1) on a 4-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) above for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100%, each of the responses to (2) were proportionately altered to yield the desired total of 100%.

### Variable 66

Title: Self-Rated Liking for Professional Administrative Activities
Source: Satisfaction with Activities Scale
Description: Each participating faculty member was required to indicate (1) on a 4-point scale the amount of satisfaction he derives from "administrative activities." The derived raw score was obtained by multiplying (1) and (2) by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. Each of the nine items concerns a common professional activity associated with medical practice. With each item the faculty member was required to indicate (1) on a 4-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) above for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100% each of the responses to (2) were proportionately altered to yield the desired total of 100%.

### Variable 67

**Title:** Self-Rated Liking for Miscellaneous Professional Activities
**Source:** Satisfaction with Activities Scale
**Description:** Each participating faculty member was required to list any professional activities which weren't included in Variables 59 through 66, inclusively, of the Satisfaction with Activities Scale in this item. Then he was required to indicate (1) on a 4-point scale the amount of satisfaction he derives from these activities, and (2) the approximate percentage of his total working time that he spends in these activities. Since no subject listed more than one of these additional activities the derived raw score was obtained by multiplying (1) and (2) above by each other.

This variable is one of nine items comprising the Satisfaction with Activities Scale. Each of the nine items concerns a common professional activity associated with medical practice. With each item the faculty member was required to indicate (1) on a 4-point scale, ranging from "little satisfaction" to "a great deal of satisfaction," the amount of satisfaction he derives from engaging in the activity concerned, and (2) the approximate percentage of his total working time that he devotes to that activity. As such, the nine items are designed to encompass all of the physicians' professional activities. Thus, (2) for all nine items should total to 100%. In those cases in which the subject failed to have (2) above for all nine items equal 100%, each of the responses to (2) were proportionately transformed to yield the desired total of 100%.

### Variable 68

**Title:** Overall Occupational Satisfaction
**Source:** Satisfaction with Activities Scale
**Description:** The raw score on this variable was simply the total of the raw scores derived for variables 59 through 67 inclusively.

### Variable 69

**Title:** Rating of Overall Performance Based on All of Above Information
**Source:** Panel of expert judges
**Description:** For each participating faculty member a standardized brochure was constructed containing (1) a typed copy of all responses to the interview form, (2) education and training institutions, positions, and dates, (3) professional positions and experiences,

(4) publications, (5) honors or awards received, and (6) military experiences, if any. These brochures were then rated on a 5-point scale (5 represented outstanding success) by five prominent full-time faculty members of the University of Utah. Thus, the recorded raw score for the variable consisted of the average of the ratings given each faculty member by this group of five judges.

## Variable 70

Title: Interviewer Rating of Cooperation
Source: Project Interviewer
Description: Each interviewer was required to rate each physician interviewed on a 5-point scale of "cooperativeness on the research project." The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by the interviewer: "1" being given to the below average category and "5" to the outstanding category.

## Variable 71

Title: Interviewer Rating of Likeability
Source: Project interviewer
Description: Each interviewer was required to rate each physician interviewed on a 5-point scale of "How well liked by interviewer." The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by the interviewer: "1" being given to the below average category and "5" to the outstanding category.

## Variable 72

Title: Extent to Which Willingly Met Participation Requirements for This Project
Source: Project records
Description: On the same date, all faculty members were sent a form requesting their agreement to participate in the study. Agreement was signified by signing the form and returning to the project office. Those faculty members that returned their forms in March, April, and May were given scores of "1", "2", and "3" respectively. Those faculty members that failed to return the form and required a personal phone call to establish whether or not they were willing to cooperate with the study were given a score of "4". Those faculty members who did not send in the form, who did not respond to a personal phone call, and who required a personal letter from the Dean of the Medical School requesting their cooperation were given a score of "5". Thus, this variable was scored on a 5-point continuum from "quick to cooperate" to "very hestitant to cooperate."

## Variable 73

Title: Undergraduate Grade Point Average

Source: Official transcripts

Description: As part of the interview, each participating faculty member was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universitiies attended. The raw scores computed for this variable were based on those documents that pertained to undergraduate education. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, or F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores so assigned were then (1) multiplied by the number of units or hours per course, (2) totaled per faculty member, and (3) divided by the total number of courses taken to yield the resultant raw score for each faculty member.

## Variable 74

Title: Medical or Graduate School Grade Point Average

Source: Official transcripts

Description: As part of the interviews, each participating faculty member was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on those documents that pertained to either medical school performance or graduate school performance, or both (some M.D. faculty members had only medical school education, and some with both Ph.D. and M.D. degrees had both medical school and graduate school training). If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's and "1" to D;s, E's, and F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used, appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores so assigned were (1) multiplied by the number of units or hours per course, (2) totaled per faculty member, and (3) divided by the total number of courses.

## Variable 75

Title: Age at Which Received M.D. or Ph.D.

Source: Official records

Description: The recorded raw score was obtained by subtracting the year of birth from the year that the first doctorate (either M.D. or Ph.D.) was obtained.

## Variable 76

Title: Years of Experience Since Recieving M.D. or Ph.D.

Source: Official records

Description: The recorded raw score was obtained by first subtracting the year that the first doctorate (either M.D. or Ph.D.) was obtained from 1962. Then, the number of years spent in internship and residency was subtracted from this value.

### Variable 77

Title: Total Number of Undergraduate and Graduate Degrees
Source: Official transcripts and records
Description: The recorded raw score for this variable was simply the number of recognized undergraduate and graduate degrees received during each participating faculty member's career.

### Variable 78

Title: Age
Source: Official records
Description: The recorded raw scores were obtained by subtracting each participating faculty member's year of birth as indicated by official College of Medicine records, from 1962.

### Variable 79

Title: Academic Appointment Rather Than Research
Source: Official records
Description: The scoring on this variable was dichotomous. A "1" or academic score was obtained if a faculty member held any of the following College of Medicine titles in the school year 1961-1962: instructor, assistant professor, associate professor, and professor. A zero or research score was obtained if a faculty member held any of the following College of Medicine titles in the school year 1961-1962: research instructor, assistant research professor, associate research professor, and research professor. If a faculty member held both an academic and a research appointment he received a "1" on this variable. Since this was a dichotomous variable the scores were not converted to T-scaled standard scores.

### Variable 80

Title: M.D. Degree Rather than Ph.D.
Source: Official records
Description: The members of the full-time faculty all possess one or more doctoral degrees (M.D., Ph.D., or both). This variable isolated those who possess only a Ph.D. from those who have only an M.D. or both an M.D. and Ph.D. The recorded raw score was simply a "1" if an M.D. or an M.D. and a Ph.D. was held and zero if only a Ph.D. was held. Since this was a dichotomous variable the scores were not converted to T-scaled standard scores.

# APPENDIX B

## Title, Source, and Description of Scoring System for Each Variable for Urban Specialist Sample

### Variable 1

**Title:** Number of Times Nominated as Outstanding Contributor by Urban Specialist Colleague

**Source:** Colleagues

**Description:** Each physician was asked in the interview: (1) "Could you name three or four persons who are certified specialists who you believe have made outstanding contributions to the medical profession, taking into consideration their number of years as a physicia as well as limitations of time and opportunity?", and (2) "Could you name three or four physicians who are certified specialists who will make outstanding contributions in the future? Although these two questions were intended to isolate outstanding contributors from future outstanding contributors, a preliminary analysis of the responses indicated that the overlap between the two questions was considerable and that they should be treated as one in the data analysis. Accordingly, the raw score[15] for this variable consisted of the total number of times each physician had been mentioned by his specialist colleagues as either an outstanding contributor or a future outstanding contributor.

### Variable 2

**Title:** Number of Times Nominated as Preferred Consultant by Urban Specialist Colleagues

**Source:** Colleagues

**Description:** The recorded raw score for this variable consisted of the number of times each physician in this sample was mentioned by a specialist colleague in response to the following question asked in the interview: "Is your practice the type in which you request consultations from other physicians? If so, who do you usually refer to?"

### Variable 3

**Title:** Number of Nominations as Preferred Consultant by General Practitioners

**Source:** General Practitioner colleagues

**Description:** Each physician in the Urban and Rural General Practitioner samples was asked: (1) "Is your practice the type in which you request consultations from other physicians? If yes, who do you usually refer to?", and (2) "If someone in your immediate family were sick, other than yourself, who are two or three physicians you would be likely to send them to to find out what was wrong?" The recorded raw score consisted of the number of times each physician in the Urban Specialist sample had been mentioned by his general practitioner colleagues on both of these questions combined.

### Variable 4

**Title:** Number of Times Nominated as Outstanding Contributor by College of Medicine Faculty

**Source:** College of Medicine full-time faculty

**Description:** Each participating faculty member of the College of Medicine full-time faculty sample was asked: (1) "Could you name three or four persons on the medical school faculty who you believe have made outstanding contributions to the medical profession, taking into consideration their number of years as a physician as well as limitations of time and opportunity?," and (2) "Could you name three or four physicians on the faculty who will make outstanding contributions in the future?" Since most of the physicians of the present Urban Specialist sample were on the College of Medicine "clinical faculty," its members were frequently mentioned by the full-time faculty sample members when they responded to the above two questions. Thus, the recorded raw score consisted of the number of times each Urban Specialist physician was mentioned in the above two questions by their full-time faculty colleagues.

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[15] Raw scores on all variables, with the exception of the two dichotomous control variables (Variables 76 and 77) were converted to T-scaled standard scores (Guilford, 1950, pp. 296-302) with a mean of 50 and a standard deviation of 10. These standardized scores were used in the data analysis.

### Variable 5

Title: Rating of "Clinical Excellence" by Medical College Department Head

Source: In general, department heads for clinical departments of the College of Medicine were contracted. However, in the departments of surgery and pathology the department heads did not agree to participate in this phase of the study. Accordingly, the Dean of the College of Medicine rated the physicians in the Urban Specialist sample that were clinical faculty members of these departments. In addition, the head of the department of medicine was on leave and ratings for this department were made by the acting head of the department.

Description: Since most of the physicians of the present Urban Specialist sample were on the College of Medicine "clinical faculty," they were known on a professional level by the department heads of their particular medical specialty. Thus, heads of the clinical departments were asked to rate each Urban Specialist physician on a 5-point scale of "average," "somewhat above average," "considerably above average," or "outstanding" after reading the following instructions:

> Please rate each of the physicians below as to his clinical excellence, using as a norm what you consider the average should be for a person of his age and years of experience.

Accordingly, the recorded raw score for this variable consisted of the 5-point weight assigned to each physician by these department heads.

### Variable 6

Title: Number of Different Residency Hospitals

Source: Compendium listings

Description: Educational and training experiences of all physicians in the United States are recorded in the Directory of the American Medical Association. From this source, a list of all non-duplicate positions whose title included the term "resident" was compiled for each physician. During the interview, each physician was requested to supplement and correct the list so that it represented an accurate report of his residency training. From this list a raw score was derived by simply counting the number of different hospitals contained within the list.

### Variable 7

Title: Number of Years Spent in Residency

Source: Compendium listings

Description: Educational and training experiences of all physicians in the United States are recorded in the Directory of the American Medical Association. From this source, a list of all non-duplicate positions whose title included the term, "resident" was conpiled for each physician. During the interview, each physician was requested to supplement and correct the list so that it represented an accurate report of residency training. From this list a raw score was derived by simply counting the total number of years occupied in these positions

## Variable 8

Title: Judged Quality of National Board Certification
Source: Expert judge
Description: All recognized specialty certifications the participating physicians had been credited as having received by the Directory of the American Medical Association (1962 edition) were posted on a master list and submitted to the Dean of the College of Medicine for evaluation on a 5-point scale. Only those certifications approved by the Advisory Board for Medical Specialists of the American Medical Association were included in t the master list. Then, each physician's specialty certification was assigned its appropriate quality score which served as the raw score for this variable. In those few instances in which a given physician had more than one recognized specialty certification, the average of the quality scores was used as the raw score.

## Variable 9

Title: Present College of Medicine Clinical Faculty Rank
Source: Official records
Description: The raw score for this variable was based on the 1961-1962 College of Medicine catalog. A score of "1" was given to clinical instructors, a score of "2" to assistant clinical instructors, a score of "3" to associate clinical professors, and a score of "4" to clinical professors. In those few cases in which a physician had an appointment in more than one department, the raw score recorded was that of the highest rank in any department.

## Variable 10

Title: Mobility Rate in Professional Positions Since Receiving M.D.
Source: Interview and official records
Description: Prior to the interview, a search was made of official College of Medicine records and various compendium listings to compile a sequential list of all professional positions held by each participating physician. During the interview each doctor was asked to make appropriate additions or corrections to his list. Since the different medical specialties differed with respect to the number of positions involved in residency training, only post residency, professional positions were included. Then, starting with the first position held since receiving the M.D., each physician was given a score of "1" for his first position and each position thereafter which was judged by the project staff to represent an advancement over the immediately preceeding position held. With the exception of the first position held since the M.D., all positions which were not judged to represent an advancement over the immediately preceeding position were scored zero. Any positions which were not judged to be directly related to the medical profession were also given a score of zero. Finally, to obtain the recorded raw score all "1" scores were totaled and divided by the number of years since the physician had completed his residency.

## Variable 11

Title: Total Number of Listings in Honorary Compendiums
Source: Compendium listings
Description: The raw score on this variable was simply the number of times each physician was listed in the most recent editions of the following compendiums: Who's Who in America, Who's Who in the West, American Men of Medicine, and American Men of Science.

### Variable 12

Title: Gross Income from Medical Profession

Source: Interview

Description: Each participating physician was requested to indicate on a 9-category scale ranging from "under $10,000" to "over $100,000" his appropriate net and gross income derived from only the medical profession during the previous year. In general, the resultant raw score consisted of the numerical value assigned to the category to which each physician had indicated his gross income fell. The gross income was selected as the measure for this variable because this was the type of income which was estimated the most frequently. In those cases in which a physician estimated only his net income, the value assigned to the net estimate made was converted to standard scores: then, a physician's standard score for net income was taken as equal to his standard score for gross income. It is emphasized that the raw score based on gross income is not the gross income *per se*, but only in which category the income estimate fell. Thus, each physician received a raw score from 1 to 9 for gross income.

### Variable 13

Title: Number of Current Memberships in Scientific and Professional Societies

Source: Interview and compendium listings

Description: Prior to the interview, a list derived from compendium sources, such as the *Directory of the American Medical Association*, was compiled for each physician containing scientific and professional societies in which he had been credited membership. In the interview each physician was requested to supplement and correct the list so that it represented a current listing of society memberships. Thus, the recorded raw score simply consisted of societies contained in the final, corrected list.

### Variable 14

Title: Average Judged Quality of Societies in Which Membership is Current

Source: Interview, compendium listings, and expert judges

Description: Prior to the interview, a list, derived from compendium sources, such as the *Directory of the American Medical Association*, was compiled for each participating physician containing scientific and professional societies in which he had been credited membership. In the interviews, each physician was requested to supplement and correct the list so that it represented a current listing of society memberships. Then, the individual lists were transcribed to a master list and submitted to the Dean of the Medical School for evaluation on a 5-point scale of quality. In those cases in which the Dean was not familiar with the societies, they were submitted to other appropriate physician judges for similar evaluation. Finally, the so derived quality weights were assigned to each physician's societies in which membership was credited. These weighted scores were then totaled and divided by the total number of society memberships to get the recorded raw score.

### Variable 15

Title: Overall Occupational Satisfaction

Source: Satisfaction with Activities Scale

Description: This variable is derived from the nine items comprising the Satisfaction with Activities Scale. With each item of the scale the participating physician was required to indicate: (1) on a 4-point scale ranging from "little satisfaction" to "a great deal of satisfaction" the amount of satisfaction he derives from engaging in each of the following nine common medical activities: actual practice, teaching, research, studying and ading, consulting, professional society participation, writing professional reports, ticles, and books, administrative activities, and a miscellaneous category to cover any ofessional activity not covered by the foregoing eight activities; and (2) the approximate rcentage of his total working time that he spends in each of these activities. In the event ) above did not total 100% for all nine acrivities, the responses to (2) were proportionately ansformed to yield the desired total of 100%. To compute the raw score for this variable e responses to (1) and (2) above were first multiplied together, resulting in nine scores, e for each activity. Then, the recorded raw score was determined by merely totaling ese nine scores for each physician.

### Variable 16

tle: Number of Times During Career Invited to Serve as Editor of Scientific or ofessional Journal
urce: Interview
escription: The recorded raw score was the number elicited in response to the question: )uring your career, how many times have you been asked to serve as a consulting editor editor for scientific or professional journals?" In the event that a range was given as a sponse to the question, the midpoint of the interval was taken as the raw score, e.g., sponse, 20-25; raw score, 22.5.

### Variable 17

tle: Number of Times During Career Invited to Serve on Scientific and Professional dvisory Boards
urce: Interview
escription: The recorded raw score was the number elicited in response to the question: n your total career, how many times have you been asked to serve on such groups as ientific advisory boards, study sections or research proposal review panels?" In the event at a range was given as a response to the question, the midpoint of the interval was taken as e raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 18

tle: Average Judged Quality of Scientific and Professional Awards Received During Career
urce: Interview and expert judges
escription: This item of the questionnaire form required each participating physician to dicate any honors or awards, such as honorary degrees and prizes for research ntributions, he had received during his career. Those honors or awards indicated on e physician's curriculum vita were also included. Only honors or awards directly related recognition for outstanding achievement in the medical profession were considered; e.g., llowships, honorary scholastic societies, and academic appointments were not considered. ien, all acceptable, different honors or awards were listed anonymously and submitted to e Dean of the Medical School for evaluation on a 5-point scale in terms of the judged gnificance of each of the honors or awards. The so assigned weights were then assigned ch physician's acceptable honors or awards, totaled, and averaged to determine the sultant raw scores.

### Variable 19

tle: Self-Reported Number of Contributions Made to Medicine
urce: Interview
escription: As part of the interview, each participating physician was asked to indicate (1)

the two best contributions he had made during his career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. The derived raw score consisted of the total number of different contributions elicited by each physician which were judged by the project staff to be directly related to the medical profession.

### Variable 20

Title: Average Judged Quality of Self-Reported Contributions Made to Medicine
Source: Interview and expert judges
Description: As part of the interview, each participating physician was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by each physician in response to (1) and (2) were transcribed to a master list and submitted anonymously to the Dean of the Medical School for evaluation on a 5-point scale in terms of judged quality of each of the contributions. These quality weights for the responses of each physician that were classified as medical contributions were then totaled and averaged; thus yielding the resultant raw scores.

### Variable 21

Title: Self-Reported Number of Non-Medical Contributions to Society
Source: Interview
Description: As part of the interview, each participating physician was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by a given physician in response to (1) and (2) which were judged by the project staff as not being directly related to the medical profession, science, and/or the University but which were related to society in its broadest sense were totaled to yield the recorded raw score.

### Variable 22

Title: Total Number of Papers Presented at Scientific and Professional Meetings During Career
Source: Interview
Description: The recorded raw score consisted of the number elicited in response to the question: "How many papers have you read at scientific or professional meetings during your career?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 23

Title: Average Number of Journal Publications Per Year Since Receiving M.D.
Source: Interview and compendium listings
Description: Prior to the interview, a list, derived from compendiums listings, was compiled for each participating physician containing scientific and professional publications in which he was listed as one of the authors. During the interview, each physician was requested to supplement and correct the list so that it represented a current listing of scientific and professional publications. The total number of publications appearing on this final list was then divided by the number of years that had lapsed since the M.D. degree was received and 1962: this score comprised the recorded raw score for this variable.

### Variable 24

Title: Average Level of Contributions to Publications as Indicated by Senior vs. Junior Authorship Status

Source: Interview and compendium listings

Description: Prior to the interview, a list, derived from compendium listings, was compiled for each participating physician containing his scientific and professional publications. During the interview the physician was requested to supplement and correct the list so that it represented a current listing of his scientific and professional publications. Then, for every physician each publication listed was given one of 3 scores: "3" if the physician was the sole author, "2" if he was the senior author, and "1" if he was a joint author. The so derived scores for each physician's publications were then totaled and divided by the number of years lapsed since he had received his M.D. degree.

### Variable 25

Title: Number of Research Projects with Which Involved During Career

Source: Interview

Description: The score on this variable was based on the participating physician's response to the questions, "Have you ever been involved with or done formal research related to medicine? If so, who were the principal investigators, what was the title of the project, what was the granting agency, and what was the amount of the grant?" The recorded raw score was merely the number of different projects which were indicated in response to these questions.

### Variable 26

Title: Number of Scientific and Professional Journals Reviewed Regularly

Source: Interview

Description: The recorded raw score consisted of the number elicited in response to the question: "How many journals do you review regularly?" In the event that a range was given for a response the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 27

Title: Number of Subscriptions to Scientific and Professional Journals

Source: Interview

Description: The recorded raw score consisted of the number elicited in response to the question: "To how many journals do you actually subscribe?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 28

Title: Number of Articles in Scientific and Professional Journals Read in Detail Each Month

Source: Interview

Description: The recorded raw score consisted of the number elicited in response to the question "How many journals do you review regularly?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

## Variable 29

**Title**: Average Number of Society Meetings Attended Annually
**Source**: Interview
**Description**: The recorded raw score consisted of the number elicited in response to the question: "How many professional and scientific meetings do you attend annually?" In the event that a range was given for a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5. Also, no differentiation was made as to the type of meetings, i.e., state and county meetings were scored the same as national meetings.

## Variable 30

**Title**: Number of Postgraduate Courses Taken During Career
**Source**: Interview
**Description**: In the interview the participating physicians were asked to answer the following two questions: "What postgraduate courses have you taken? How many of them were refresher courses?" The recorded raw score consisted of the number given in response to the first question. In the event a range was given in response to either of the questions, the midpoint of the interval given was taken as the raw score, e.g., response, 10-15; raw score, 12.5. Also, a postgraduate course was defined as a class which was taken from a recognized medical school and from which grades were awarded for completion of its requirements; a refresher course was defined as a class which was taken at a university, college or scientific or professional society, whose content was mostly a review of past learned material, and from which no academic credit was awarded.

## Variable 31

**Title**: Number of Refresher Courses Taken During Career
**Source**: Interview
**Description**: In the interview, the participating physicians were asked the following two questions: "What postgraduate courses have you taken? How many of them were refresher courses?" The recorded raw score consisted of the number given in response to the second question. In the event a range was given in response to either of the questions, the midpoint of the interval given was taken as the raw score, e.g., response, 10-15; raw score, 12.5. Also, a postgraduate course was defined as a class which was taken from a recognized medical school and from which grades were awarded for completion of its requirements; a refresher course was defined as a class which was taken at a university, college or scientific or professional society, whose content was mostly a review of past learned material, and from which no academic credit was awarded.

## Variable 32

**Title**: Physicians Evaluation of Usefullness of Drug Detail Men
**Source**: Interview
**Description**: In the interview, the participating physicians were asked two questions: first, "Do you have many drug detail men coming in to see you?" and second, "Do you find them helpful?" The recorded raw score consisted of a composit evaluation by members of the project staff of the physician's responses to these two questions: "1" was given for "below average," "2" for "average," and "3" for "above average" for the project staff's impression of the degree to which the physician found drug detail men helpful as a means of keeping abreast in their particular field or specialty.

## Variable 33

**Title**: Extent of Physician's Experimental Use of Drugs Provided by Drug Detail Men

**Source**: Interview

**Description**: In the interview each participating physician was asked, "Do you utilize the samples provided by drug detail men on an experimental basis?" If the physician responded negatively (e.g., "no"), he was assigned a raw score of "1." If he responded positively (e.g., "yes"), he was asked to elaborate in terms of whether his experimentation was on an informal basis or if it was formally sponsored by drug companies. Then, if the physician indicated informal experimentation, he was assigned a raw score of "2," if he indicated formally sponsored experimentation he was assigned a raw score of "3."

## Variable 34

**Title**: Number of Techniques Other Than Journals, Meetings, and Drug Detail Men Used in Keeping Abreast

**Source**: Interview

**Description**: In the interview, each participating physician was asked, "What techniques do you use to keep abreast in your field?" The derived raw score was simply the total number of different techniques (other than journals, scientific and professional meetings, and drug detail men) that the physician elicited. Responses indicating use of journals, scientific and professional meetings, or drug detail men were disregarded because these were covered elsewhere in the scoring (Variable 13, 26, 27, 28, 29, 32, and 33).

## Variable 35

**Title**: Average Number of Formal Medical Consultations Called into Monthly

**Source**: Interview

**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question: "In the past month, approximately how many times were you called into formal consultation on a medical problem?" In those cases in which the doctor's response was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. When the response was in some unit other than per month, e.g., per day, per week, it was converted accordingly on the basis of 5-day work week with 52 weeks in the year. Formal consultation was defined in terms of any requested opinion on a medical problem which was submitted in writing.

## Variable 36

**Title**: Average Number of Informal Medical Consultations Called into Monthly

**Source**: Interview

**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question: "In the past month, approximately how many times were you called into informal or curbstone (telephone) consultations on a medical problem?" In those cases in which the physician's response was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. When the response was in some unit other than per month, e.g., per day, per week, it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year. Informal consultation was defined in terms of any requested opinion on a medical problem that was not given in writing and which was not requested by a patient.

## Variable 37

**Title**: Percentage of Patients on Which Consultations are Requested
**Source**: Interview
**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question: "On what proportion of your patients do you request consultation." In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

## Variable 38

**Title**: Number of Patients Seen Per Day
**Source**: Interview
**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question, "What is the average number of patients you see in your office on an average day?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

## Variable 39

**Title**: Average Amount of Time Spent with Patients on First Visit
**Source**: Interview
**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question: "How much time do you spend on the average patient during their first visit?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. All responses were recorded in terms of minutes and in those cases which the response was in some unit other than minutes (e.g., hours) appropriate transformations were made.

## Variable 40

**Title**: Average Amount of Time Spent in Explaining Diagnoses to Patients
**Source**: Interview
**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question, "Approximately how much time do you try to spend in explaining your diagnosis of a patient to the patient concerned?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. All responses were recorded in terms of minutes and those cases in which the response was in some unit other than minutes (e.g., hours) appropriate transformations were made.

## Variable 41

**Title**: Proportion of Office Patients Treated Without Charge
**Source**: Interview
**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question, "What proportion of your patients do you treat without charge?" It was explained to each physician that this estimate should be confined to those patients who he treated knowing that no reimbursement would be made for services rendered and should not include patients who refuse or neglect to pay for his services. Also, in those cases in which the physician's response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score 7.5

## Variable 42

**Title:** Proportion of Office Patients that Fail to Pay Physician for Services Rendered

**Source:** Interview

**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "What proportion of your patients don't pay their bills?" It was explained to each physician that this estimate should be confined to those patients who refuse or neglect to pay for his services, in whole or in part, after having been billed for these services and should not include patients he treated knowing that no reimbursement would be made for services he rendered. Also, in those cases in which the physician's repsonse was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 43

**Title:** Self-Estimated Average Socio-economic Level of Patients

**Source:** Interview

**Description:** The raw score on this variable was based on the physician's response to the interview question, "In terms of socio-economic level, what type of patient do you see most frequently?" The recorded raw score consisted of a rating by members of the project staff of the response elicited representing an estimated mode on a 3-point scale having the following values: "1" for blue collar or lower-class, "2" for white collar or middle-class, and "3" for professional or upper-class.

## Variable 44

**Title:** Degree to Which Physician Adheres to Patient Appointment Schedule

**Source:** Interview

**Description:** The score on this variable was based on the physician's response to the interview question:"Do you see most of your patients by appointment only." If he responded with "no" or something indicating an appointment schedule was not maintained he was given a raw score of "1." If he responded with "yes" or something indicating an appointment schedule was adhered to, a second question was asked: "If a patient came in 45 mintues late for a scheduled appointment would you try to work them in or would you reschedule them so that they had to come back at a later date?" If the doctor indicated he would work the patient in he was given a raw score of "2;" if he indicated he would reschedule the patient he was given a raw score of "3."

## Variable 45

**Title:** Average Number of House Calls Made Per Week

**Source:** Interview

**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "How many home calls do you make in the course of a week?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5. Also, when the response was in some unit other than per week, e.g., per day, per month, it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year.

### Variable 46

Title: Degree to Which Physician Considers Psychological Factors in Diagnosis
Source: Interview
Description: The score on this variable was based on the physician's response to the interview question, "To what extent do you consider psychological or psychosomatic factors in your medical examinations and diagnoses?" The recorded raw score consisted of a rating by members of the project staff representing an estimated mode of the response elicited on a 3-point scale having the following values: "1" for "below average," "2" for "average," and "3" for "above average."

### Variable 47

Title: Average Number of Hours Per Week Devoted to Medical Practice
Source: Interview
Description: The recorded raw score on this variable was the physician's estimate in response to the interview question, "Approximately how many hours per week do you devote to your medical practice?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 60-70; raw score, 65. Also, when the response was in some unit other than per week (e.g., per day), it was converted accordingly on the basis of a 5-day work week with 4 weeks in a month.

### Variable 48

Title: Average Number of Hospitalized Patients
Source: Interview
Description: The recorded raw score on this variable was the physician's estimate in response to the interview question, "What is the average number of patients you have in a hospital at one time?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 49

Title: Number of Hospitals in Which Physician Works
Source: Interview
Description: The score on this variable was based on the physician's response to the interview question: "Which hospitals do you work in?" It was also pointed out to the physician that his response should be restricted to those hospitals to which he usually sent his patients and not those hospitals in which he merely maintained courtesy privileges. The recorded raw score was simply the total number of different hospitals elicited by the physician.

### Variable 50

Title: Average Judged Quality of Hospitals in Which Physician Works
Source: Interview and expert judges
Description: The score on this variable was based on the physician's response to the interview question: "Which hospitals do you work in?" It was also pointed out to the doctor that his response should be restricted to those hospitals to which he usually sent his patients and not those hospitals in which he merely maintained courtesy privileges. The so derived responses were then transferred to a master list of hospitals which was submitted to the Dean of the Medical School for evaluation on a 5-point quality scale. The recorded raw score consisted of the average of the ratings for all hospitals in which a given physician worked.

### Variable 51

**Title:** Number of Hospitals in Which Physician Maintains Courtesy Priviledges

**Source:** Interview

**Description:** The score on this variable was based on the physician's response to the interview question, "Which hospitals do you have courtesy privileges in?" It was also pointed out to the doctor that his response should be restricted to those hospitals in which he merely maintained courtesy privileges and not those hospitals to which he usually sent his patients. The recorded raw score was simply the total number of different hospitals elicited by the physician.

### Variable 52

**Title:** Average Judged Quality of Hospitals in Which Physician Maintains Courtesy Privileges

**Source:** Interview and expert judges

**Description:** The score on this variable was based on the physician's response to the interview question, "Which hospitals do you have courtesy privileges in?" It was also pointed out to the doctor that his response should be restricted to those hospitals in which he merely maintained courtesy privileges and not those hospitals to which he usually sent his patients. The thusly derived rsponses were then transferred to a master list of hospitals which was submitted to the Dean of the Medical School for evaluation on a 5-point scale of quality. The recorded raw score consisted of the average of the ratings for all hospitals in which a given physician indicated having courtesy privileges.

### Variable 53

**Title:** Number of Formal Responsibilities Physician has in Hospitals

**Source:** Interview

**Description:** During the interview, each participating physician was asked: "Do you participate in administrative, teaching, or staff activities (in any of the hospitals) over and above what is ordinarily required? If so, which activities?" The recorded raw score on this variable was simply the total number of different activities eleicted in response to this question.

### Variable 54

**Title:** Average Judged Quality of Hospital Responsibilities

**Source:** Interview and expert judges

**Description:** During the interview each physician was asked: "Do you participate in administrative, teaching, or staff activities (in any of the hospitals) over and above what is ordinarily required? If so, which activities?" The responses for each doctor were transcribed to a master list and submitted to the Dean of the Medical School for evaluation on a 5-point quality scale. The recorded raw score consisted of the average of the ratings for the hospital responsibilities elicited by a given physician.

### Variable 55

**Title:** Self-Estimated Value of Office Equipment

**Source:** Interview

**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "Approximately how much would it cost you to replace the equipment in your office?" All raw scores were recorded in terms of thousands of dollars and/or fractions thereof. In those cases in which the physician was practicing in a clinic or partnership and unable to estimate his individual equipment costs he was asked to estimate the cost for the entire clinic or partnership, in which case, the recorded raw score consisted of this estimate divided by the number of physicians involved. As a working definition, each physician in all cases was instructed to include in his estimate "everything but the structure itself."

### Variable 56

**Title:** Number of M.D. Assistants on Physician's Ancillary Staff
**Source:** Interview
**Description:** As part of the interview, each participating physician was asked to give a detailed accounting of the employees on his ancillary staff, including the number of M.D. assistants, nurses, technicians, and clinical employees. The recorded raw score for this variable consisted of the number of M.D. assistants indicated. In those cases in which the physician was practicing in a clinic or partnership where the ancillary staff was shared by more than one physician the raw score for this variable was the number of M.D. assistants indicated divided by the number of physicians in the clinic or partnership.

### Variable 57

**Title:** Number of Nurses on Physician's Ancillary Staff
**Source:** Interview
**Description:** As part of the interview, each participating physician was asked to give a detailed accounting of the employees on his ancillary staff, including the number of M.D. assistants, nurses, technicians, and clerical employees. The recorded raw score for this variable consisted of the number of nurses indicated in those cases in which the physician was practicing in a clinic or partnership where the ancillary staff was shared by more than one physician, the raw score for this variable was the number of nurses indicated divided by the number of physicians in the clinic or partnership.

### Variable 58

**Title:** Number of Technicians on Physician's Ancillary Staff
**Source:** Interview
**Description:** As part of the interview, each participating physician was asked to give a detailed accounting of the employees on his ancillary staff, including the number of M.D. assistants, nurses, technicians, and clerical employees. The recorded raw score for this variable consisted of the number of technicians indicated. In those cases in which the doctor was practicing in a clinic or partnership where the ancillary staff was shared by more than one physician, the raw score for this variable was the number of technicians indicated divided by the number of physicians in the clinic or partnership.

### Variable 59

**Title:** Number of Clerical, Administrative, and Janitorial Workers on Physician's Ancillary Staff
**Source:** Interview
**Description:** As part of the interview, each participating physician was asked togive a detailed accounting of the employees on his ancillary staff, including the number of clerical, administrative, and janitorial workers. The recorded raw score consisted of the total number of employees indicated within these classifications. In those cases in which he was practicing in a clinic or partnership where the ancillary staff was shared

by more than one physician, the raw score for this variable was the total number of clerical, administrative, and janitorial employees indicated divided by the number of physicians in the clinic or partnership.

### Variable 60

Title: Average Number of Speeches on Medical Topics to Laymen Groups Per Year

Source: Interview

Description: The recorded raw score was the physician's response to the interview question, "How many times a year do you address laymen groups on a medical topic?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 61

Title: Average Amount of Vacation Taken Annually

Source: Interview

Description: The recorded raw score was the physician's response, in terms of weeks, to the interview question, "How much time do you take for vacations annually?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 3-4; raw score, 3.5. Also, if he indicated his vacation was split up into more than one period the total time, in weeks, was used as the raw score (e.g., response: "Two weeks in May and one week in January,": raw score, 3). Finally, if the physician responded in some unit other than weeks (e.g., months or days), it was converted accordingly on the basis of a 7-day week, with 4 weeks in a month.

### Variable 62

Title: Extent to Which Physician Plans and Maintains Leisure Time Activities

Source: Interview

Description: During the interview each participating physician was asked: first, "Do you attempt to maintain a regular schedule for leisure and home activities?" and second, "How successful are you in maintaining this schedule?" The recorded raw score consisted of a composite evaluation by members of the project staff of the physician's responses to these two questions: "1" was given for "below average," "2" for "average," and "3" for "above average" for the project staff's impression of the degree to which he planned and maintained his leisure time activities.

### Variable 63

Title: Number of Current Memberships in Social and Avocational Organizations

Source: Interview

Description: The recorded raw score for this variable consisted of the number elicited in response to the interview question, "Without mentioning names, how many social or avocational organizations are you a member?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 64

Title: Number of Current Memberships in Civic and Political Organizations

Source: Interview

Description: The recorded raw score for this variable consisted of the number elicited in response to the interview question, "Without mentioning names, how many civic or political organizations are you a member?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 65

**Title:** Characteristics Physician Considers Important for Success in Medicine: Number of "Common" Responses

**Source:** Interview

**Description:** Each response elicited to the interview question, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?" was recorded individually on cards. The cards were then sorted to discover common areas that were emphasized. Twenty such common areas were isolated: training and experience, intelligence, curiosity, attention to detail, hard work, keeping abreast, patience, aviilability to patients, conscientiousness, getting along with colleagues, sincere interest in the medical profession, professional competence, accuracy in professional judgments, public interests other than medicine, dedication to medicine, unselfishness, liking people, personality, adequate patient relationships, and miscellaneous. The cards were then coded for both individual subject and common area category and then shuffled and submitted to a member of the project staff for sorting into the common area categories. All cards were then coded bor both individual subject and common area category and then shuffled and submitted to a member of the project staff for sorting into the common area categories. All cards that were sorted into the same categories as in the first sorting were retained; those that were sorted into different categories were submitted to a second project staff member for sorting. In this case, those that showed agreement with either of the previous sortings were retained. The remainder, those that showed no agreement with any of the sortings, were placed in the miscellaneous category. As such, the number of responses contained in each of the categories was as follows: training and experience (83), adequate patient relationships (55), keeping abreast (33), hard work (32), availability to patients (26), personality (26), professional competence (22), sincere inte interest in medical profession (20), conscientiousness (18), getting along with colleagues (15), liking people (15), attention to detail (9), public interests other than medicine (7), accuracy in professional judgements(6), unselfishness (6), curiosity (5), dedication to medicine (4), patience (4), and miscellaneous (139). On the basis of the number of responses in each category, a median separation was then made between the categories with the largest number of responses ("common factors of success") and the categories with the smallest number of responses ("uncommon factors of success") as follows:

| Uncommon | Number of responses | Common | Number of responses |
|---|---|---|---|
| Miscellaneous | 139 | Training and experience | 83 |
| Patience | 4 | Patient relationship | 55 |
| Dedication to medicine | 4 | Keeping abreast | 33 |
| Curiosity | 5 | Hard work | 32 |
| Unselfishness | 6 | Availability | 26 |
| Accuracy in professional judgments | 6 | Personality | 26 |
| Public interests | 7 | | 255 |
| Attention to detail | 9 | | |

| Uncommon (con't) | Number of responses (con't) |
|---|---|
| Intelligence | 10 |
| Liking people | 15 |
| Getting along with colleagues | 15 |
| Conscientiousness | 18 |
| Professional competence | 22 |
|  | 270 |

The raw scores were then computed for each physician: i.e., the total number of responses per doctor classified as common.

### Variable 66

Title: Characteristics Physician Considers Important for Success in Medicine: Number of "Uncommon" Responses

Source: Interview

Description: Each response elicited in response to the interview question, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?, " was recorded individually on cards. The cards were then sorted to discover common areas that were emphasized. Twenty such common areas were isolated: training and experience, intelligence, curiosity, attention to detail, hard work, keeping abreast, patience, availability to patients, conscientiousness, getting along with colleagues, sincere interest in the medical profession, professional competence, accuracy in professional judgments, public interests other than medicine, dedication to medicine, unselfishness, liking people, personality, adequate patient realtionships, and miscellaneous. The cards were then coded for both individual subject and common area category and then shuffled and submitted to a member of the project staff for sorting into the common area categories. All cards that were sorted into the same categories as in the first sorting were retained; those that were sorted into different categories were submitted to a second project staff member for sorting. In this case, those that showed agreement with either of the previous sortings were retained. The remainder, those that showed no agreement in any of the sortings, were placed into the miscellaneous category. As such, the number of responses contained in each of the categories was as follows: training and experience (83), adequate patient relationships (55), keeping abreast (33), hard work (32), availability to patients (26), personality (26), professional competence (22), sincere interest in medical profession (20), conscientiousness (18), getting along with colleagues (15), liking people (15), attention to detail (9), public interests other than medicine (7), accuracy in professional judgements (6), unselfishness (6), curiosity (5), dedication to medicine (4), patience (4), and miscellaneous (139). On the basis of the number of responses in each category, a median separation was then made between the categories with the largest number of responses ("Common factory of success") and the categories with the smallest number of responses ("uncommon" factors of success"):

| Uncommon | Number of responses | Common | Number of responses |
|---|---|---|---|
| Miscellaneous | 139 | Training and experience | 83 |
| Patience | 4 | Patient relationship | 55 |
| Dedication to medicine | 4 | Keeping abreast | 33 |
| Curiosity | 5 | Hard work | 32 |
| Unselfishness | 6 | Availability | 26 |
| Accuracy in professional judgements | 6 | Personality | 26 |
|  |  |  | 255 |

| Uncommon (con't) | Number of responses (con't) |
|---|---|
| Public interests | 7 |
| Liking people | 15 |
| Getting along with colleagues | 15 |
| Conscientiousness | 18 |
| Interest in medicine | 20 |
| Professional competence | 22 |
|  | 270 |

The raw scores were then computed for each physician: i.e., the total number of responses per doctor classified as uncommon.

## Variable 67

**Title**: Characteristics Physician Considers Important for Success in Medicine: "Commonness" of Responses Elicited

**Source**: Interview

**Description**: Each response elicited in response to the interview question, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?, " was recorded individually on cards. The cards were then sorted to discover common areas that were emphasized. Twenty such common areas were isolated: training and experience, intelligence, curiosity, attention to detail, hard work, keeping abreast, patience, availability to patients, conscientiousness, getting along with colleagues, sincere interest in the medical profession, professional competence, accuracy in professional judgements, public interests other than medicine, dedication to medicine, unselfishness, liking people, personality, adequate patient relationships, and miscellaneous. The cards were then coded for both individual subject and common area category and then shuffled and submitted to a member of the project staff for sorting into the common area categories. All cards that were sorted into the same categories as in the first sorting were retained; those that were sorted into different categories were submitted to a second project staff member for sorting. In this case, those that showed agreement with either of the previous sortings were retained; those that showed no agreement in any of the sortings, were placed in the miscellaneous category. As such, the number of response contained in each of the categories was as follows: training and experience (83), adequate patient relationships (55), keeping abreast (33), hard work (32), availability to patients (26), professional competence (22), sincere interest in medical profession (20), conscientiousness (18), getting along with colleagues (15), liking people (15), attention to detail (9), public interests other than medicine (7), accuracy in professional judgements (6), unselfishness (6), curiosity (5), dedication to medicine (4), patience (4), and miscellaneous (139). On the basis of the number of responses in each common area category, the categories were ranked from the one with the most number of responses to the one with the least number of responses. Then, the number of responses in each category was divided by the total number of responses to give a weight for each response in each category (since the miscellaneous category only contained "unique" responses, the weight for each response in this category was determined by dividing "1" by the total number of responses):

| | Frequency | Weight |
|---|---|---|
| Training and experience | 83 | 158 |
| Patient relationship | 55 | 105 |
| Keeping abreast | 33 | 63 |
| Hard work | 32 | 61 |
| Availability | 26 | 50 |
| Personality | 26 | 50 |
| Professional competence | 22 | 42 |
| Interest in medicine | 20 | 38 |
| Conscientiousness | 18 | 34 |
| Getting along with colleagues | 15 | 29 |
| Liking people | 15 | 29 |
| Intelligence | 10 | 18 |
| Attention to detail | 9 | 17 |
| Public interests | 7 | 13 |
| Accuracy in professional judgements | 6 | 11 |
| Unselfishness | 6 | 11 |
| Curiosity | 5 | 10 |
| Dedication to medicine | 4 | 8 |
| Patience | 4 | 8 |
| Miscellaneous | 13 9 | 2 |
| | 525 | |

Finally, each response for each physician was assigned its appropriate weight, the weights were totaled, and the total was divided by the number of responses elicited to yield the recorded raw score.

## Variable 68

**Title:** Self-Rating of Success in Medicine

**Source:** Interview

**Description:** At the conclusion of the interview, each physician was asked, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?" After responding to this question, the physician was then asked, "Now then, considering the amount of time you have been in practice and your experience, on a scale from 1 to 100, with 100 being the highest, how would you rate yourself in achievement of these basic factors?" The recorded raw score consisted of the physician's estimate in response to the second of these questions. In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 90-95; raw score, 92.5. Also, in those few cases in which the physician evaluated himself for each factor elicited by him in response to the first question above, rather than an overall evaluation of all factors listed, his raw score consisted of the average of his evaluations.

## Variable 69

**Title:** Expert Panel Rating of Overall Performance Based on All Available Information

**Source:** Expert judges

**Description:** For each participating specialist a standardized brochure was constructed containing (1) a typed copy of all responses to the interview form, (2) education and training institutions, positions and dates, (3) professional positions and experiences, (4) publications, (5) honors or awards received, (6) military experiences, if any. These brochures were then rated on a 5-point scale (5 representing "outstanding success") by 5 prominent urban specialist physicians. Thus, the recorded raw score for this variable consisted of the average of the ratings given to each physician by this group of 5 judges.

### Variable 70

Title: Interviewer Rating of Condition of Physician's Office
Source: Project Interviewer
Description: Each interviewer was required to rate every physician interviewed on a 5-point scale as to whether he thought "the doctor had a spacious, well-equipped office." The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by the project interviewer: "1" being given to the below average category and "5" to the outstanding category.

### Variable 71

Title: Interviewer Rating of Likeability
Source: Project interviewer
Description: Each interviewer was required to rate each physician interviewed on a 5-point scale of "How well liked by interviewer." The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by the interviewer; "1" being given to the below average category and "5" to the outstanding category.

### Variable 72

Title: Interviewer Rating of Physician's Involvement in this Project
Source: Project interviewer
Description: Each interviewer was required to rate every physician interviewed on a 5-point scale of "how involved (interested) was the physician in the study?" The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by the project interviewer: "1" being given to the below average category and "5" to the outstanding category.

### Variable 73

Title: Age at Which Received M. D.
Source: Official records
Description: The recorded raw score was obtained for each participating physician by subtracting the year of birth from the year the M. D. degree was received.

### Variable 74

Title: Number of Years Between Receiving M. D. and Receiving National Board Certification
Source: Official records
Description: From official records, which were subsequently verified during the interview, it was ascertained the year in which each physician received his specialty certification (certifications approved by the Advisory Board for Medical Specialists of the American Medical Association), the number of years of residency training each physician had experienced, and the year each had received his M. D. degree. The recorded raw score consisted of the number of years lapsed between receiving the M. D. degree and receiving specialty certification minus the total number of years spent in residency training.

### Variable 75

**Title:** Years of Experience Since Receiving M.D.
**Source:** Official records
**Description:** The recorded raw score was obtained by first subtracting the year the M.D. degree was awarded from 1962. Then, the number of years spent in internship and residency was subtracted from this value.

### Variable 76

**Title:** Individual Practice Rather than Group, Clinic, or Hospital Practice
**Source:** Interview
**Description:** This variable was intended to isolate those physicians who engage in individual practice from those who engage in other types of medical practice (i.e., group, clinic, or hospital practice). The recorded raw score was simply "1" if he indicated in the interview that he had an individual practice and zero if he engaged in any other type of practice Since this was scored as a dichotomous variable the raw scores were not converted to T-scaled standard scores.

### Variable 77

**Title:** Hospital Practice Rather than Individual, Group, or Clinic Practice
**Source:** Interview
**Description:** This variable was intended to isolate those physicians who were in a hospital practice from those who engaged in other types of medical practice (i.e., group, clinic, or individual practice). The recorded raw score was simply "1" if the physician indicated in the interview that he was in a hospital practice and zero if he engaged in any other type of practice. Since this was scored as a dichotomous variable the raw scores were not converted to T-scaled standard scores.

### Variable 78

**Title:** Undergraduate Grade-Point Average
**Source:** Official transcripts
**Description:** As part of the interview, each physician was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on these documents that pertained to undergraduate education. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, or F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores so assigned were then (1) multiplied by the number of units per course, (2) totaled per physician, and (3) divided by the total number of courses taken to yield the resultant raw score for each physician.

### Variable 79

**Title:** Grade-Point Average for First Two Years of Medical School
**Source:** Official transcripts
**Description:** As part of the interview, each physician was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on those documents that pertained to the first two years of medical school

performance. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, and F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores so assigned were then (1) multiplied by the number of units or hours per course, (2) totaled per physician, and (3) divided by the total number of courses taken.

## Variable 80

Title: Grade-Point Average for Last Two Years of Medical School
Source: Official transcripts
Description: As part of the interview, each physician was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on those documents that pertained to the last two years of medical school performance. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, and F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used, appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores so assigned were then (1) multiplied by the number of units or hours per course, (2) totaled per physician, and (3) divided by the total number of courses taken.

# APPENDIX C

## Title, Source, and Description of Scoring System for Each Variable for:

Urban General Practitioner Sample
Rural General Practitioner Sample
Combined Urban and Rural General Practitioner Sample

### Variable 1

**Title:** Number of Nominations as Preferred Consultant by General Practitioner Colleagues
**Source:** Colleagues
**Description:** In the interview each physician was asked: (1) "Is your practice the type in which you request consultations from other physicians? (If yes) Who do you refer them to?," (2) "Who have you left your practice with during the past three years when you went on vacation?;" and (3) "If someone in your immediate family were sick, other than yourself, who are two or three physicians you would be likely to send them to to find out what was wrong?" The recorded raw score[16] consisted of the total number of times each physician had been mentioned by his general practitioner colleagues in the three questions combined (however, if a physician was mentioned more than once on these three questions by a single colleague he was credited with only one nomination).

### Variable 2

**Title:** Number of Different Internship and Residency Hospitals
**Source:** Compendiums
**Description:** Educational and training experiences of all physicians in the United States are recorded in the Directory of the American Medical Association. From this source, a list of all non-duplicate positions whose title included the terms "intern" or "resident" was compiled for each doctor. During the interview, each doctor was requested to supplement and correct the list so that it represented an accurate report of internship and residency training. From this corrected list a raw score was derived by simply counting the number of different hospitals contained within the list.

### Variable 3

**Title:** Number of Years Spent in Internship and Residency
**Source:** Compendiums
**Description:** Educational and training experiences of all physicians in the United States are recorded in the Directory of the American Medical Association. From this source, a list of all non-duplicate positions whose title included the terms "intern" or "resident" was compiled for each physician. During the interview each physician was requested to supplement and correct the list so that it represented an accurate report of internship and residency training. From this list a raw score was derived by simply counting the total number of years occupied in these positions.

### Variable 4

**Title:** Mobility Rate in Professional Positions Since Receiving M. D.
**Source:** Interview and official records
**Description:** Prior to the interview, a search was made of official College of Medicine records and various compendium listings to compile a sequential list of all professional positions held for each doctor. During the interview, each doctor was asked to make appropriate additions or corrections to his list. Then, starting with the first position held since receiving the M. D. degree, each physician was given a score of "1" for his first position and each position thereafter which was judged by the project staff to represent an advancement over the immediately preceding position. With the exception of the first

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[16] Raw scores on all variables for all three samples, with the exception of the three dichotomous control variables (Variables 36, 76 and 77), were converted to normalized standard scores (Guilford, 1950, pp. 296-302) with a mean of 50 and standard deviation of 10. These normalized scores were used in the data analysis.

position held since the M.D., all positions which were not judged to represent an advancement over the immediately preceding position were scored zero. Any positions which were not judged to be directly related to the medical profession were also given a score of zero. Also, all internship, residency, and proctorship positions were disregarded and not considered in the scoring. Finally, all "1" scores were totaled and divided by the number of years since the physician had completed his internship or proctorship to yield the recorded raw score.

### Variable 5

**Title:** Total Number of Listings in Honorary Compendiums

**Source:** Compendium listings

**Description:** The raw score on this variable was simply the number of times each physician was listed in the most recent editions of the following compendiums: *Who's Who in America*, *Who's Who in the West*, *American Men of Medicine*, and *American Men of Science*.

### Variable 6

**Title:** Gross Income from Medical Profession

**Source:** Interview

**Description:** Each participating physician was requested to indicate on a 9-category scale, ranging from "under $10,000" to "over $100,000," his appropriate net and gross income derived from only the medical profession during the previous year. In general, the resultant raw score consisted of the numerical value assigned to the category to which the physician had indicated his *gross* income fell. The gross income was selected as the measure for this variable because this was the type of income which was estimated the most frequently. In those cases in which the doctor estimated only his net income, the value assigned to the net estimate was converted to standard scores: then, a physician's standard score for net income was taken as equal to his standard score for gross income. It is emphasized that the raw score based on gross income is not the gross income *per se*, but only in which category the estimate fell. Thus, the physicians received a raw score from 1 to 9 for gross income.

### Variable 7

**Title:** Number of Current Memberships in Scientific, and Professional Societies

**Source:** Interview and compendium listings

**Description:** Prior to the interview, a list derived from compendium sources, such as the *Directory of the American Medical Association*, was compiled for each doctor containing scientific and professional societies in which he was credited membership. In the interview each doctor was requested to supplement and correct the list so that it represented a current listing of society memberships. Thus, the recorded raw score simply consisted of societies contained in the final, corrected list.

### Variable 8

**Title:** Average Judged Quality of Societies in Which Membership is Current

**Source:** Interview, compendium listings, and expert judges

**Description:** Prior to the interview, a list, derived from compendium sources, such as the *Directory of the American Medical Association*, was compiled for each physician containing scientific and professional societies in which he was credited membership. In the interviews, each doctor was requested to supplement and correct the list so that it represented a current listing of society memberships. Then, the individual lists were transcribed to a master list and submitted to the Dean of the Medical School for evaluation.

on a 5-point scale of quality. In those cases in which the Dean was not familiar with the societies, they were submitted to other appropriate physician judges for similar evaluation. Finally, the so derived quality weights were assigned to each physician's societies in which membership was credited. These weighted scores were then totaled and divided by the total number of society memberships to get the recorded raw score.

### Variable 9

**Title:** Overall Occupational Satisfaction

**Source:** Satisfaction with Activities Scale

**Description:** This variable is derived from the nine items comprising the Satisfaction with Activities Scale. With each item of the scale the physician is required to indicate: (1) on a 4-point scale, ranging from "little satisfaction" to " a great deal of satisfaction, " the amount of satisfaction he derives from engaging in each of the following nine common medical activities: actual practice, teaching, research, studying and reading, consulting, professional society participation, writing professional reports, articles, and books, administrative activities, and a miscellaneous category to cover any professional activity not included in the foregoing eight activities; and (2) the approximate percentage of his total working time that he spends in each of these activities. In the event (2) above did not total 100% for all nine activities, the responses to (2) were proportionately transformed to yield the desired total of 100%. To compute the raw score for this variable, the responses to (1) and (2) above were first multiplied together, resulting in nine scores, one for each activity. Then, the recorded raw score was determined by merely totaling these nine scores for each physician.

### Variable 10

**Title:** Self-Reported Number of Contributions Made to Medicine

**Source:** Interview

**Description:** As part of the interview, each physician was asked to indicate (1) the two best contributions he had made during his career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. The derived raw score consisted of the total number of different contributions elicited by each physician from both questions which were judged by the project staff to be directly related to the medical profession.

### Variable 11

**Title:** Average Judged Quality of Self-Reported Contributions Made to Medicine

**Source:** Interview and expert judges

**Description:** As part of the interview, each physician was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by each doctor in response to (1) and (2) were transcribed to a master list and submitted anonymously to the Dean of the Medical School for evaluation on a 5-point scale in terms of judged quality of each of the contributions. Those quality weights for the responses of each physician that were classified as medical contributions were then totaled and averaged, thus yielding the resultant raw score.

### Variable 12

**Title:** Self-Reported Number of Non-Medical Contributions to Society
**Source:** Interview
**Description:** As part of the interview, each physician was asked to indicate (1) the two best contributions he had made during his professional career and (2) any other contributions he had made to the University of Utah, the medical profession, science, or society. All different contributions elicited by a given doctor in response to (1) and (2) which were judged by the project staff as not being directly related to the medical profession, science, and/or the University, but which were related to society in its broadest sense, were totaled to yield the recorded raw score.

### Variable 13

**Title:** Total Number of Papers Presented at Scientific and Professional Meetings During Career
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many papers have you read at scientific or professional meetings during your career?" In the event a range was given in response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 14

**Title:** Total Number of Publications
**Source:** Interview and compendium listings
**Description:** Prior to the interview, a search was made of various compendium listings to compile a list of publications for each participating physician. During the interview, each doctor was asked to review his list and make appropriate additions or corrections so that it represented an accurate list of professional and scientific publications in which his name had appeared as one of the authors. The recorded raw score was obtained by simply totaling the number of publications presented on each physician's corrected list.

### Variable 15

**Title:** Level of Participation in Medical Research
**Source:** Interview
**Description:** During the interview, each physician was asked, "Have you ever had the opportunity to participate in medical research?" If the doctor indicated he had not, he was given a raw score of "1." If he indicated that he had participated in research, a series of questions followed which were designed to determine the level of participation involved. If it was indicated that research was limited to required work for internship, he received a raw score of "2," if it was limited to required work for residency, a raw score of "3" was given. If, on the other hand, the research occurred during internship or residency but was not required as part of the training and if he played a "major" role in the research, he was given a raw score of "4." Finally, if he initiated a research project at any time and was given financial support from a granting agency in excess of $2,000 or if he initiated medical research after residency training, he was given a raw score of "5."

### Variable 16

**Title:** Number of Scientific and Professional Journals Reviewed Regularly
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many journals do you review regularly?" In the event that a range was given for a response, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 17

**Title:** Number of Subscriptions to Scientific and Professional Journals
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "To how many journals do you actually subscribe?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score 22.5.

### Variable 18

**Title:** Number of Articles in Scientific and Professional Journals Read in Detail Each Month
**Source:** Interview
**Description:** The recorded raw score consisted of the number elicited in response to the question: "How many journals do you review regularly?" In the event that a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 20-25; raw score, 22.5.

### Variable 19

**Title:** Average Number of National and Regional Society Meetings Attended Annually
**Source:** Interview
**Description:** The recorded raw score for this variable was based on the physician's estimate in response to the interview question, "How many scientific and professional meetings do you attempt to attend annually?" In responding, he was instructed to break his estimate down into the number of national and regional, state, and county and city meetings attended annually. Thus, the raw score consisted of his combined estimate for national and regional meetings attended. In the event a range was given for a response, the midpoint of the interval was taken as the number of meetings attended annually for any of the above three categories.

### Variable 20

**Title:** Average Number of State, County, and City Society Meetings Attended Annually
**Source:** Interview
**Description:** The recorded raw score for this variable was based on the physician's estimate in response to the interview question, "How many scientific and professional meetings do you attempt to attend annually?" In responding, he was instructed to break his estimate down into the number of national and regional, state, and county and city meetings attended annually. Thus, the raw score consisted of the physician's combined estimate for state and county and city meetings attended. In the event a range was given for a response, the midpoint of the interval was taken as the number of meetings attended annually for any of the above three categories.

### Variable 21

tle: Total Number of Offices Held in Scientific and Professional Societies During Career
urce: Interview and compendium listings
scription: Prior to the interview, a list, derived from compendium sources, such as
e Directory of the American Medical Association, was compiled for each physician
ntaining memberships and offices held in scientific and professional societies. In the
erview, each doctor was requested to supplement and correct the list so that it
presented an accurate report of society memberships and offices held. The type of
embership (e.g., honorary, fellow) was not considered or scored as an office held.
e recorded raw score consisted of the number of society offices contained in the final
rrected list.

### Variable 22

tle: Number of Postgraduate Courses Taken During Career
urce: Interview
scription: The recorded raw score for this variable consisted of the number of courses
icited by the physician in response to the question: "Have you taken any postgraduate
urses (those in which the physician received academic credit or hours)? If yes, specify."
the event he was unable to recall all of the postgraduate courses taken, he was asked
estimate the number taken; in which case, the raw score was the estimate elicited
the estimate was a range, the midpoint of the interval was taken as the raw score).

### Variable 23

tle: Number of Refresher Courses Taken During Career
urce: Interview
scription: The recorded raw score for this variable consisted of the number of courses
icited in response to the following interview question: "Have you taken any university
college sponsored refresher courses (those in which physician did not receive academic
edit or hours)? If yes, specify." In the event the physician was unable to recall all of
e refresher courses taken, he was asked to estimate the number taken; in which case,
e raw score was the estimate elicited (if the estimate was a range, the midpoint of
e interval was taken as the raw score).

### Variable 24

tle: Number of Scientific and Professional Society Courses Taken During Career
urce: Interview
scription: The recorded raw score for this variable consisted of the number of courses
icited by the physician in response to the following interview question: "Have you taken
y courses that were sponsored by scientific or professional societies? If yes, specify."
the physician was unable to recall all of the society courses taken, he was asked to
timate the number taken; in which case, the raw score was the estimate elicited (if the
timate was a range, the midpoint of the interval was taken as the raw score).

### Variable 25

tle: Physician Evaluation of Usefulness of Drug Detail Men
urce: Interview
scription: In the interview, the physicians were asked two question: first, "Do you
ve many drug detail men coming in to see you?," and, second, "Do you find them
lpful?" The recorded raw score consisted of a composite evaluation by members of
e project staff of a physician's responses to these two questions: "1" was given for
elow average," "2" for "average," and "3" for "above average" for the project staff's

impression of "the degree to which the doctor found drug detail men helpful as a means of keeping abreast in his particular field or specialty."

### Variable 26

**Title:** Extent of Physician's Experimental Use of Drugs Provided by Drug Detail Men
**Source:** Interview
**Description:** In the interview each physician was asked, "Do you utilize the samples provided by drug detail men on an experimental basis?" If the physician responded negatively (e.g., "no"), he was assigned a raw score of "1." If he responded positively (e.g., "yes"), he was asked to elaborate in terms of whether his experimentation was on an informal basis or if it was formally sponsored by drug companies. Then, if he indicated informal experimentation, he was assigned a raw score of "2;" if he indicated formally sponsored experimentation he was assigned a raw score of "3."

### Variable 27

**Title:** Number of Techniques Other Than Journals, Meetings, and Drug Detail Men Used in Keeping Abreast
**Source:** Interview
**Description:** In the interview, each physician was asked, "What techniques do you use to keep abreast in your field?" The derived raw score was simply the total number of different techniques (other than journals, scientific and professional meetings, and drug detail men) that the physician had elicited. Responses indicating use of journals, scientific and professional meetings, or drug detail men were disregarded because these were covered elsewhere in the scoring (Variables 16-25).

### Variable 28

**Title:** Percentage of Patients on Which Consultations are Requested
**Source:** Interview
**Description:** The score on this variable was based on the physician's responses to the two following questions: "Is your practice the type in which you request consultations from other physicians?," and "If yes, with what proportion of your patients do you request consultations from other physicians?" The recorded raw score consisted of his estimate in response to these two questions. In those cases in which his estimate was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. A consultation was defined as an instance in which a physician requests a diagnostic opinion, but not treatment, from another physician about a patient, and was differentiated from a referral which was defined as an instance in which a physician sends a patient to another physician for treatment.

### Variable 29

**Title:** Average Number of Patients Referred to Colleagues Per Month
**Source:** Interview
**Description:** The score on this variable was based on the physician's responses to the following interview questions: "Is your practice the kind where you refer patients to other physicians and "If yes, approximately how many are referred to other physicians in an average month?" The recorded raw score consisted of the doctor's estimate in response to these two questions. In those cases in which his estimate was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. A referral was defined as an instance in which a physician sends a patient to

another physician for treatment, and was differentiated from a consultation which was defined as an instance in which a physician requests a diagnostic opinion, but not treatment, about a patient from another physician.

### Variable 30

Title: Average Number of Patients Referred to Physician Per Month
Source: Interview
Description: The score on this variable was based on the physician's responses to the two following interview questions: "Is your practice the kind where patients are referred to you by other physicians?," and, "If yes, approximately how many are referred to you in an average month?" The recorded raw score consisted of his estimate in response to these two questions. In those cases in which his estimate in response to these two questions was a range, the median of the range was taken as the raw score, e.g., response, 20-25; raw score, 22.5. A referral was defined as an instance in which a physician sends a patient to another physician for treatment and was differentiated from a consultation which was defined as an instance in which a physician requests a diagnostic opinion, but not treatment, about a patient from another physician.

### Variable 31

Title: Number of Patients Scheduled Per Hour
Source: Interview
Description: The recorded raw score consisted of the physician's estimate in response to the interview question, "How many patients do you attempt to schedule per hour?" In the event a range was given as an estimate, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 32

Title: Proportion of Working Time Spend with Patients
Source: Interview
Description: The recorded raw score consisted of the physician's estimate in response to the interview question, "Of your total working time, approximately what percentage of it do you spend actually seeing patients?" In the event a range was given as an estimate, the median of the range was taken as the raw score, e.g., response, 50-60; raw score, 55.

### Variable 33

Title: Proportion of Patients Requiring Excessive Time to Explain Diagnosis
Source: Interview
Description: The recorded raw score consisted of the physician's response to the interview question, "With what proportion of your patients do you feel it takes an excessive amount of time for them to understand your diagnosis?" In the event a range was given as a response, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 34

**Title**: Proportion of Patients Requiring Laboratory Work
**Source**: Interview
**Description**: The recorded raw score consisted of the physician's response to the interview question, "What proportion of your patients require laboratory work?" It was also indicated that his answer should be confined to patients on their first appointment with him, and should not include patients treated over a period of time. In the event a range was given as a response, the median of the range was taken as the raw score, e.g., response, 10-20; raw score, 15.

## Variable 35

**Title**: Proportion of Patients Requiring Laboratory Work Outside Physician's Office Building
**Source**: Interview
**Description**: In the interview, the physician was first asked, "What proportion of your patients require laboratory work?." In responding to this first question, he was instructed to confine his estimate to patients on their first appointment and should not include patients over a period of time. Secondly, he was asked, "What proportion of these patients require laboratory work outside of this building (i.e., his office building). The recorded raw score for this variable consisted of his estimate in response to the second question. In the event a range was given as a response, the median of the range was taken as the raw score, e.g., response, 10-20; raw score, 15.

## Variable 36

**Title**: Laboratory Facilities Within Physician's Office Building or Not
**Source**: Interview
**Description**: This variable was intended to isolate those physicians who had laboratory facilities within their office building from those who did not. The recorded raw score was simply "1" if the doctor answered affirmatively to the interview question, "Do you have laboratory facilities within this building?," and zero if he responded negatively to the question. Since this was scored as a dichotomous variable, the raw scores were not converted to normalized standard scores.

## Variable 37

**Title**: Proportion of Office Patients Treated Without Charge
**Source**: Interview
**Description**: The recorded raw score on this variable was the physician's estimate in response to the interview question, "What proportion of your patients do you treat without charge?" It was explained to each doctor that this estimate should be confined to those patients who he treated knowing that no reimbursement would be made for services rendered and should not include patients who refuse or neglect to pay for his services. Also, in those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 38

**Title:** Proportion of Office Patients Treated at a Reduced Rate
**Source:** Interview
**Description:** The recorded raw score for this variable was the physician's estimate in r response to the interview question, "What proportion of your office practice patients do you treat at a reduced rate?" It was explained to each doctor that this estimate should be confined to those patients who he deliberately treated at a reduced rate and should not include patients who refused or neglected to pay in full for his services. Also, in those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 39

**Title:** Average Number of Hours Per Week Spent in Treating Charity Patients Outside Office
**Source:** Interview
**Description:** The recorded raw score for this variable consisted of the physician's estimate in response to the interview question, "How much time per week (in terms of hours) do you donate to treating charity patients in the local hospitals or charity institutions?" It was emphasized that in responding he should not include in this estimate patients treated in his office without charge or at a reduced rate. In the event a range was elicited by the doctor, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 40

**Title:** Self-Estimated Average Socio-economic Level of Patients
**Source:** Interview
**Description:** The raw score for this variable was based on the physician's response to the interview question, "In terms of socio-economic level, what proportion of your patients belong to (1) blue collar or lower-class families, (2) white collar or middle-class families, and (3) professional or upper-class families?" The recorded raw score consisted of assigning a "1" to the doctor if he indicated more of his patients were blue collar or lower-class families than white collar or middle-class families or professional or upper-class families; a "2" if he indicated more were white collar or middle-class than blue collar or lower-class or professional or upper-class; and "3" if he indicated more were professional or upper-class than blue collar or lower-class or white collar or middle-class. The physician was instructed to have the proportions assigned to these three socio-economic classes (blue collar or lower-class, white collar or middle-class, and professional or upper-class) total to 100%. Also, if he elicited a range for any of these three socio-economic classes, the median of the range was recorded as his response.

## Variable 41

**Title:** Degree to Which Physician Adheres to Patient Appointment Schedule
**Source:** Interview
**Description:** The score on this variable was based on the physician's response to the interview question, "How rigidly do you adhere to your appointment schedule?" If he indicated he "closely adhered" to his appointment schedule, he was given a raw score of "3;" if he indicated he "generally" adhered to his schedule, he was given a score of "2;" and, if he indicated he was "lax" about his schedule, he was given a score of "1."

## Variable 42

**Title:** Average Number of House Calls Made Per Week
**Source:** Interview
**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "How many home calls do you make in the course of a week?" In those cases in which the doctor's response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5. Also, when the response was in some unit other than per week (e.g., per day, per month), it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year.

## Variable 43

**Title:** Average Number of Emergency Office or Hospital Calls Made Per Week
**Source:** Interview
**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "How many times per week do you meet patients at your office or at one of the hospitals for emergency treatment?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5. Also, when the response was in some unit other than per week (e.g., per day, per month), it was converted accordingly on the basis of a 5-day work week with 52 weeks in the year.

## Variable 44

**Title:** Degree to Which Physician Considers Psychological Factors in Diagnoses
**Source:** Interview
**Description:** The recorded raw score on this variable consisted of the physician's estimate in response to the interview question, "What proportion of your patients have problems that are primarily psychosomatic or psychological rather than medical?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 45

**Title:** Average Number of Hours Per Week Devoted to Medical Practice
**Source:** Interview
**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "Approximately how many hours per week do you devote to your medical practice?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 60-70; raw score, 65. Also, when the response was in some unit other than per week (e.g., per day) it was converted accordingly on the basis of a 5-day work week with 4 weeks in a month.

## Variable 46

**Title:** Average Number of Hospitalized Patients
**Source:** Interview
**Description:** The recorded raw score on this variable was the physician's estimate in response to the interview question, "What is the average number of patients you have in a hospital at one time?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 47

**Title:** Number of Hospitals in Which Physician Works
**Source:** Interview
**Description:** The score on this variable was based on the physician's response to the interview question: "Which hospitals do you work in?" It was also pointed out to the doctor that his response should be restricted to those hospitals to which he usually sent his patients and not those hospitals in which he merely maintained courtesy privileges. The recorded raw score was simply the total number of different hospitals elicited by the physician.

## Variable 48

**Title:** Average Judged Quality of Hospitals in Which Physician Works
**Source:** Interview and expert judges
**Description:** The score on this variable was based on the physician's response to the interview question: "Which hospitals do you work in?" I was also pointed out to him that his response should be restricted to those hospitals to which he usually sent his patients and not those hospitals in which he merely maintained courtesy privileges. The so derived responses were then transferred to a master list of hospitals which was submitted to the Dean of the Medical School for evaluation on a 5-point quality scale. The recorded raw score consisted of the average of the ratings for all hospitals in which a given physician worked.

## Variable 49

**Title:** Number of Hospitals in Which Physician Maintains Courtesy Privileges
**Source:** Interview and expert judges
**Description:** The score on this variable was based on the physician's response to the interview question, "Which hospitals do you have courtesy privileges in?" It was also pointed out to him that his response should be restricted to those hospitals in which he merely maintained courtesy privileges and not those hospitals to which he usually sent his patients. The recorded raw score was simply the total number of different hospitals elicited by the doctor.

## Variable 50

**Title:** Average Judged Quality of Hospitals in Which Physician Maintains Courtesy Privileges
**Source:** Interview and expert judges
**Description:** The score on this variable was based on the physician's response to the interview question, "Which hospitals do you have courtesy privileges in?" It was also pointed out to him that his response should be restricted to those hospitals in which he merely maintained courtesy privileges and not those hospitals to which he usually sent his patients. The so derived responses were then transferred to a master list of hospitals which was submitted to the Dean of the Medical School for evaluation on a 5-point scale of quality. The recorded raw score consisted of the average of the ratings for all hospitals in which a given doctor indicated having courtesy privileges.

### Variable 51

Title: Number of Formal Responsibilities Physician has in Hospitals

Source: Interview

Description: During the interview, each physician was asked to indicate any administrative, staff, or teaching responsibilities he had in any hospitals. It was indicated that in responding he was to include only responsibilities that were over and above what is ordinarily required to maintain hospital courtesy privileges. The recorded raw score was simply the total number of different activities elicited in response to the question.

### Variable 52

Title: Self-Estimated Value of Office Equipment

Source: Interview

Description: The recorded raw score on this variable was the physician's estimate in response to the interview question, "Approximately how much would it cost you to replace the equipment in your office?" All raw scores were recorded in terms of thousands of dollars and/or fractions thereof. In those cases in which the physician was practicing in a clinic or partnership and unable to estimate his individual equipment costs he was asked to estimate the cost for the entire clinic or partnership; in which case, the recorded raw score consisted of this estimate divided by the number of physicians involved. As a working definition, each physician in all cases was instructed to include in his estimate "everything but the structure itself."

### Variable 53

Title: Number of Nurses on Physician's Ancillary Staff

Source: Interview

Description: As part of the interview, each physician was asked to give a detailed accounting of the employees on his ancillary staff, including the number of M.D. assistants, nurses, technicians, and clerical employees. The recorded raw score for this variable was the number of nurses indicated. In those cases in which he was practicing in a clinic or partnership where the ancillary staff was shared by more than one physician, the raw score for this variable was the number of nurses indicated divided by the number of physicians in the clinic or partnership.

### Variable 54

Title: Number of Clerical, Administeative, and Janitorial Workers on Physician's Ancillary Staff

Source: Interview

Description: As part of the interview, each physician was asked to give a detailed accounting of the employees on his ancillary staff, including the number of clerical, administrative, and janitorial workers. The recorded raw score consisted of the total number of employees indicated within these classifications. In those cases in which he was practicing in a clinic or partnership where the ancillary staff was shared by more than one physician, the raw score for this variable was the total number of clerical, administrative, and janitorial employees indicated divided by the number of physicians in the clinic or partnership.

### Variable 55

Title: Extent to Which Physician Limits Size of Practice
Source: Interview
Description: The raw score for this variable was based on the physician's responses to the two following interview questions: "Do you deliverately try to limit the size of your practice: If yes, what techniques do you use?" If he answered negatively to the first question, he was given a raw score of "1;" if he answered positively to the first question but did not respond to the second question, he was given a raw score of "2;" if he answered positively to the first question and responded meaningfully to the second question, he was given a raw score of "3."

### Variable 56

Title: Self-Reported Satisfaction with Size of Practice
Source: Interview
Description: The score for this variable was based on the physician's response to the interview question, "How satisfied are you with the size of your practice?" On the basis of his response, the interviewer was instructed to check one of the following categories: "too big," "about right," or "too small." If too big was checked by the interviewer, he received a raw score of "3;" if about right was checked, he received a score of "2;" and if too small was checked, a score of "1" was given to the doctor.

### Variable 57

Title: Amount of Malpractice Insurance Carried
Source: Interview
Description: In the interview, each physician was asked to indicate the amount of malpractice insurance he carried for his practice. In so doing, he was asked to report both the amount of public liability he carried for an individual suit and the amount of public liability for a group suit. The recorded raw score consisted of the amount, in terms of thousands of dollars, reported by the doctor for group public liability.

### Variable 58

Title: Average Number of Speeches on Medical Topics to Laymen Groups Per Year
Source: Interview
Description: The recorded raw score was the physician's response to the interview question, "How many times a year do you address laymen groups on a medical topic?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 59

Title: Average Number of Speeches on Non-Medical Topics to Laymen Groups Per Year
Source: Interview
Description: The recorded raw score consisted of the physician's estimate in response to the interview question, "Disregarding religious activities, how many times a year do you address laymen groups on topics other than medicine?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

### Variable 60

Title: Average Amount of Vacation Taken Annually
Source: Interview
Description: The recorded raw score was the physician's response in terms of weeks

to the interview question, "How much time do you take for vacations annually?" In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 3-4; raw score, 3.5. Also, if he indicated that his vacation was split up into more than one period the total time, in weeks, was used as the raw score, e.g., response; "Two weeks in May and one week in January;" raw score, 3. Finally, if the doctor responded in some unit other than weeks (e.g., months or days), it was converted accordingly on the basis of a 7-day week, with 4 weeks in a month.

## Variable 61

Title: Extent to Which Physician Plans and Maintains Leisure Time Activities
Source: Interview
Description: During the interview each physician was asked: first, "How many days per week do you attempt to take off for leisure and home activities?" and, second, "How successful are you in keeping to this schedule?" The recorded raw score consisted of a composite evaluation by the members of the project staff of the doctor's responses to these two questions: "1" was given for "below average," "2" for "average," and "3" for "above average" for the project staff's impression of the degree to which he planned and maintained his leisure time activities.

## Variable 62

Title: Number of Current Memberships in Social and Avocational Organizations
Source: Interview
Description: The recorded raw score for this variable consisted of the number elicited in response to the interview question, "Without mentioning names, how many social or avocational organizations are you a member?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 63

Title: Number of Offices Held in Social and Avocational Organizations
Source: Interview
Description: The recorded raw score consisted of the number elicited in response to the question, "Number of offices held?," which immediately followed the question, "Without mentioning names, how many social or avocational organizations are you a member?" In the event a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 64

Title: Number of Current Memberships in Civic and Political Organizations
Source: Interview
Description: The recorded raw score for this variable consisted of the number elicited in response to the interview question, "Without mentioning names, how many civic and political organizations are you a member?" In the event a range was given as a response, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 65

**Title:** Number of Offices Held in Civic and Political Organizations

**Source:** Interview

**Description:** The recorded raw score consisted of the number elicited in response to the question, "Number of offices held?" which immediately followed the question, "Without mentioning names, how many civic or political organizations are you a member? In the event a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 66

**Title:** Number of Church Activities in Which Physician Engages

**Source:** Interview

**Description:** The recorded raw score for this variable consisted of the number elicited by the physician in response to the interview question, "Without mentioning names, how many church activities do you engage in?" The physician was instructed to disregard regular church attendance in responding. In the event a range was given as a response to the question, the midpoint of the interval was taken as the raw score, e.g., response, 5-10; raw score, 7.5.

## Variable 67

**Title:** Characteristics Physician Considers Important for Success in Medicine: Number of "Common" Responses

**Source:** Interview

**Description:** Each response elicited to the interview question, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?," was recorded individually on cards. The cards were then sorted to discover common areas that were emphasized.

For the Urban General Practitioner sample, ten such common areas were isolated: personality, adequate medical care, education and training, availability to patients, hard work, honesty, keeping abreast, getting along with colleagues, adequate patient relationship and miscellaneous. For the Rural General Practitioner sample, fifteen common areas were isolated: adequate patient relationship, special medical knowledge or abilities, personality, satisfaction from work, availability to patients, interest in people, honesty, education and training, hard work, keeping abreast, community involvement, conscientiousness, financial needs, dedication to medicine, and miscellaneous.

Then, for each of the two samples, the cards were coded for both individual subject and common area category, shuffled, and submitted to a member of the project staff for sorting into the same common area categories. In this second sorting for both groups, all cards that were sorted into the same categories as in the first sorting were retained: those that were sorted into different categories were submitted to a second project staff member for similar sorting. In this case, those cards that were sorted by the second project member into the same categories as either of the previous sortings were retained: the remainder, those that showed no agreement in any of the sortings, were placed in the miscellaneous category.

As such, the number of responses contained in each of the categories were as follows: (a) for the Urban General Practitioner sample; personality (38), adequate medical care (34), education and training (22), availability to patients (21), hard work (19), honesty (16), keeping abreast (7), getting along with colleagues (6), adequate patient relationship (12), and miscellaneous (125); and (b) for the Rural General Practitioner samples; adequate patient relationship (59), special medical knowledge or abilities (19), personality (18), satisfaction from work (16), availability to patients (15), interest in people (14), honesty (14), education and training (13), hard work (11), keeping abreast (8), community involvement (7), conscientiousness (6), financial needs (6), dedication to medicine (3), and miscellaneous (52).

On the basis of the number of responses in each category, a median separation was then made between the categories with the largest number of responses ("common factors of success") and the categories with the smallest number of responses ("uncommon factors of success") as follows:

Urban General Practitioner Sample

| Common Factors of Success | Number of Responses | Uncommon Factors of Success | Number of Responses |
|---|---|---|---|
| Personality | 38 | Keeping abreast | 7 |
| Adequate medical care | 34 | Getting along with colleagues | 6 |
| Education and training | 22 | Adequate patient relationship | 12 |
| Availability to patients | 21 | Miscellaneous | 125 |
| Hard work | 19 | | |
| Honesty | 16 | | |

Rural General Practitioner Sample

| Common Factors of Success | Number of Responses | Uncommon Factors of Success | Number of Responses |
|---|---|---|---|
| Adequate patient relationship | 59 | Interest in people | 14 |
| Special medical knowledge or abilities | 19 | Honesty | 14 |
| | | Education and training | 13 |
| Personality | 18 | Hard work | 11 |
| Satisfaction from work | 16 | Keeping abreast | 8 |
| Availability to patients | 15 | Community involvement | 7 |
| | | Conscientiousness | 6 |
| | | Financial needs | 6 |
| | | Dedication to medicine | 3 |
| | | Miscellaneous | 52 |

The resultant recorded raw score was then computed, consisting of the total number of responses per subject classified as a common factor of success.

### Variable 68

Title: Characteristics Physician Considers Important for Success in Medicine: Number of "Uncommon" Responses

Source: Interview

Description: Each response elicited to the interview question, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?," was recorded individually on cards. The cards were then sorted to discover common areas that were emphasized.

For the Urban General Practitioner sample, ten such common areas were isolated: personality, adequate medical care, education and training, availability to patients, hard work, honesty, keeping abreast, getting along with colleagues, adequate patient relationship, and miscellaneous. For the Rural General Practitioner sample, fifteen common areas were isolated: adequate patient relationship, special medical knowledge or abilities, personality, satisfaction from work, availability to patients, interest in people, honesty, education and training, hard work, keeping abreast, community involvement, conscientiousness, financial needs, dedication to medicine, and miscellaneous.

Then, for each of the two samples, the cards were coded for both individual subject and common area category, shuffled, and submitted to a member of the project staff for sorting into the same common area categories. In this second sorting for both groups, all cards that were sorted into the same categories as in the first sorting were retained: those that were sorted into different categories were submitted to a second project staff member for similar sorting. In this case, those cards that were sorted by the second project member into the same categories as either of the previous sortings were retained; the remainder, those that showed no agreement in any of the sortings, were placed in the miscellaneous category.

As such, the number of responses contained in each of the categories were as follows: (a) for the Urban General Practitioner sample: personality (38), adequate medical care (34), education and training (22), availability to patients (21), hard work (19), honesty (16), keeping abreast (17), getting along with colleagues (6), adequate patient relationship (12), and miscellaneous (125); and (b) for the Rural General Practitioner sample: adequate patient relationship (59), special medical knowledge or abilities (19), personality (18), satisfaction from work (16), availability to patients (15), interest in people (14), education and training (13), hard work (11), keeping abreast (8), community involvement (7), conscientiousness (6), financial needs (6), dedication to medicine (3), and miscellaneous (52).

On the basis of the number of responses in each category, a median separation was then made between the categories with the largest number of responses ("common factors of success") and the categories with the smallest number of responses ("uncommon factors of success") as follows:

Urban General Practitioner Sample

| Common Factors of Success | Number of responses | Uncommon Factors of Success | Number of responses |
|---|---|---|---|
| Personality | 38 | Keeping Abreast | 7 |
| Adequate Medical Care | 34 | Getting Along with Colleagues | 6 |
| Education and Training | 22 | Adequate Patient Relationship | 12 |
| Availability to Patients | 21 | Miscellaneous | 125 |
| Hard work | 19 | | |
| Honesty | 16 | | |

Rural General Practitioner Sample

| Common Factors of Success | Number of Responses | Uncommon Factors of Success | |
|---|---|---|---|
| Adequate patient relationship | 59 | Interest in people | 14 |
| Special medical knowledge | 19 | Honesty | 14 |
| Personality | 18 | Education and training | 13 |
| Satisfaction from work | 16 | Hard work | 11 |
| Availability to patients | 15 | Keeping abreast | 8 |
| | | Community involvement | 7 |
| | | Conscientiousness | 6 |
| | | Financial needs | 6 |
| | | Dedication to medicine | 3 |
| | | Miscellaneous | 52 |

The resultant recorded raw score was then computed, consisting of the total number of responses per subject classified as an uncommon factor of success.

## Variable 69

**Title:** Characteristics Physician Considers Important for Success in Medicine: "Commonness" of Responses Elicited

**Source:** Interview

**Description:** Each response elicited to the interview question, "With regard to your own field or specialty, what do you consider to be the basic factors of success in this area?," was recorded individually on cards. The cards were then sorted to discover common areas that were emphasized.

For the Urban General Practitioner sample, ten such common areas were isolated: personality, adequate medical care, education and training, availability to patients, hard work, honesty, keeping abreast, getting along with colleagues, adequate patient relationship, and miscellaneous. For the Rural General Practitioner sample, fifteen common areas were isolated: adequate patient relationship, special medical knowledge or abilities, personality, satisfaction from work, availability to patients, interest in people, honesty, education and training, hard work, keeping abreast, community involvement, conscientiousness, financial needs, dedication to medicine, and miscellaneous.

Then, for each of the two samples, the cards were coded for both individual subject and common area category, shuffled, and submitted to a member of the project staff for sorting into the same common area categories. In this second sorting for both groups, all the cards that were sorted into the same categories as in the first sorting were retained; those that were sorted into different categories were submitted to a second project staff member for similar sorting. In this case, those cards then were sorted by the second project staff member into the same categories as either of the previous sortings were retained; the remainder, those that showed no agreement in any of the sortings, were placed in the miscellaneous category.

As such, the number of responses contained in each of the categories were as follows: (a) for the Urban General Practitioner sample; personality (38), adequate medical care (34), education and training (22), availability to patients (21), hard work (19), honesty (16), keeping abreast (7), getting along with colleagues (6), adequate patient relationship (12), and miscellaneous (125); and (b) for the Rural General Practitioner sample; adequate patient relationship (59), special medical knowledge or abilities (19), personality (18), satisfaction from work (16), availability to patients (15), interest in people (14), honesty (14), education and training (13), hard work (11), keeping abreast (8), community involvement (7), conscientiousness (6), financial needs (6), dedication to medicine (3), and miscellaneous (52).

On the basis of the number of responses in each common area category, the categories were ranked from the one with the most number of responses to the one with the least number of responses. Then, the number of responses in each category was divided by the total number of responses to give a weight for each response in each category (since the miscellaneous category only contained "unique" responses, the weight for each response in this category was determined by dividing "1" by the total number of responses):

Urban General Practitioner Sample

| Common Factors of Success | Number of Responses | Weight |
|---|---|---|
| Personality | 38 | 127 |
| Adequate medical care | 34 | 113 |
| Education and training | 22 | 73 |
| Availability to patients | 21 | 70 |
| Hard work | 19 | 63 |
| Honesty | 16 | 53 |
| Keeping abreast | 7 | 23 |
| Getting along with colleagues | 6 | 20 |
| Adequate patient relationship | 12 | 40 |
| Miscellaneous | 125 | 3 |

Rural General Practitioner Sample

| Common Factors of Success | Number of Responses | Weight |
|---|---|---|
| Adequate patient relationship | 59 | 226 |
| Special medical knowledge or ability | 19 | 73 |
| Personality | 18 | 69 |
| Satisfaction from work | 16 | 61 |
| Availability to patients | 15 | 57 |
| Interest in people | 14 | 54 |
| Honesty | 14 | 54 |
| Education and training | 13 | 50 |
| Hard work | 11 | 42 |
| Keeping abreast | 8 | 31 |
| Community involvement | 7 | 27 |
| Conscientiousness | 6 | 23 |
| Financial needs | 6 | 23 |
| Dedication to medicine | 3 | 11 |
| Miscellaneous | 52 | 4 |

Finally, each response for each physician was assigned its appropriate weight, the weights were totaled, and the total was divided by the number of responses elicited to yield the recorded raw score.

### Variable 70

**Title:** Self-Rating of Success in Medicine

**Source:** Interview

**Description:** At the conclusion of the interview, each physician was asked, "With regard to your own field or specialty, what do you consider to be the basic factors of success?" After responding to this question, each physician was asked, "How would you rate yourself on a 1 to 100 scale in achievement of these factors, taking into consideration your years of experience and training?" The recorded raw score consisted of his estimate in response to the second of these questions. In those cases in which his response was a range, the median of the range was taken as the raw score, e.g., response, 90-95; raw score, 92.5. Also, in those few cases in which he evaluated himself for each factor elicited by him in response to the first question above, rather than an overall evaluation of all factors listed, his raw score consisted of the average of his evaluations.

### Variable 71

**Title:** Interviewer Rating of Condition of Physician's Office

**Source:** Project interviewer

**Description:** Each interviewer was required to rate every physician interviewed on a 5-point scale as to whether he thought "the doctor had a spacious, well-equipped office." The scale ranged from "below average" to "Outstanding." The recorded raw scores consisted of the number attached to the category checked by the project interviewer: "1" being given to the below average category and "5" to the outstanding category.

### Variable 72

**Title:** Interviewer Rating of Likeability

**Source:** Project interviewer

**Description:** Each interviewer was required to rate each physician interviewed on a 5-point scale of "how well liked by interviewer." The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by their interviewer; "1" being given to the below average category and "5" to the outstanding category.

### Variable 73

**Title:** Interviewer Rating of Physician's Involvement in this Project

**Source:** Project interviewer

**Description:** Each interviewer was required to rate every physician interviewed on a 5-point scale of "how involved (interested) was the physician in the study?" The scale ranged from "below average" to "outstanding." The recorded raw score consisted of the number attached to the category checked by the project interviewer: "1" being given to the below average category and "5" to the outstanding category.

### Variable 74

**Title:** Age at which Received M.D.

**Source:** Official records

**Description:** The recorded raw score was obtained for each physician by subtracting the year of birth from the year the M.D. degree was received.

### Variable 75

**Title:** Years of Experience Since Receiving M.D.
**Source:** Official records
**Description:** The recorded raw score was obtained by first subtracting the year the M.D. degree was awarded from 1962. Then, the number of years spent in internship and residency was subtracted from this value.

### Variable 76

**Title:** Individual Practice Rather than Group, Clinic, or Hospital Practice
**Source:** Interview
**Description:** This variable was intended to isolate those physicians who engage in individual practice from those who engage in other types of medical practice, i.e., group, clinic, or hospital practice. The recorded raw score was simply "1" if he indicated in the interview that he had an individual practice and zero if he engaged in any other type of practice. Since this was scored as a dichotomous variable, the raw scores were not converted to normalized standard scores.

### Variable 77

**Title:** General Practice with Specialty Rather than General Practice Without Specialty
**Source:** Interview
**Description:** In the interview, each physician was asked, "How varied are the medical problems that you have in your practice?" On the basis of his response to this question, the interviewer checked one of the following three categories: general practitioner, general practitioner with a specialty, and specialist. If the specialist category was checked, the doctor received a raw score of "1;" and if either of the other two categories were checked, he received a raw score of zero. Since this was scored as a dichotomous variable, the raw scores were not converted to normalized standard scores.

### Variable 78

**Title:** Undergraduate Grade-Point Average
**Source:** Official transcripts
**Description:** As part of the interview, each physician was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on these documents that pertained to undergraduate education. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, or F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used, appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores thusly assigned were then (1) multiplied by the number of units or hours per course, (2) totaled per physician, and (3) divided by the total number of courses taken to yield the resultant raw score for each physician.

## Variable 79

Title: Grade-Point Average for First Two Years of Medical School
Source: Official transcripts
Description: As part of the interview, each physician was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on those documents that pertained to the first two years of medical school performance. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, and F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" wa assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used, appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores thusly assigned were then (1) multiplied by the number of units or hours per course, (2) totaled per physician, and (3) divided by the total number of courses taken.

## Variable 80

Title: Grade Point Average for Last Two Years of Medical School
Source: Official transcripts
Description: As part of the interview, each physician was requested to sign appropriate forms authorizing the project to procure official transcripts from all colleges and universities attended. The raw scores computed for this variable were based on those documents that pertained to the last two years of medical school performance. If letter grades were reported in the transcripts, a score of "4" was assigned to A's, "3" to B's, "2" to C's, and "1" to D's, E's, and F's. If numerical scores based on a range of 1 to 100 were reported in the transcripts, a score of "4" was assigned to all grades within the range of 90-100, "3" to 80-89, "2" to 70-79, and "1" to any grade below 70. If any other system of reporting grades was used, appropriate transformations were made to yield comparable 4-point grades. In all cases, the scores so assigned were then (1) multiplied by the number of units or hours per course, (2) totaled per physician, and (3) divided by the total number of courses taken.